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# USSR Report

## ECONOMIC AFFAIRS

### EKO: ECONOMICS AND ORGANIZATION OF INDUSTRIAL PRODUCTION

No. 10, October 1983

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USSR REPORT  
ECONOMIC AFFAIRS

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OF INDUSTRIAL PRODUCTION

No. 10, October 1983

Except where indicated otherwise in the table of contents the following is a complete translation of the Russian-language monthly journal EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA published in Novosibirsk.

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## MANAGEMENT INSTITUTE ASSOCIATE DISCUSSES LENIN'S LEADERSHIP STYLE

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian  
No. 10, Oct 83 pp 3-15

[Article by Ye. I. Komarov, candidate of economic sciences, docent of the Moscow Institute of Administration imeni S. Ordzhonikidze: "Organization and Efficiency"]

[Text] For every manager V. I. Lenin's work style has been, is, and will be an exemplary style, a standard. This style is a unique training aid which contains lessons on such objects of the activity the manager as the unity of theory and practice, adherence to principles, communication with the masses, the ability to draw people to oneself, an attentive and concerned attitude toward them, the ability to convince, efficiency, organization, the ability to work, simplicity and modesty, humor and joie de vivre. Any of these objects is worthy of special attention and can be disclosed on the basis of an analysis of the activity of V. I. Lenin. Taking into account the exceptionally great significance which the party attaches at the present time to such qualities of managers and such characteristics of the style of the economic manager as efficiency and organization, it would be expedient to discuss these subjects of Lenin's lessons.

Organization was noted as one of the features of V. I. Lenin's work style by those of his contemporaries who had the opportunity to come in contact with Vladimir Il'ich's personal work system (in his office in the Kremlin, at meetings of the Sovnarkom and the Council for Labor and Defense) and to pay attention to the typical aspects of his activity as a leader and an organizer.

Through his activity, V. I. Lenin showed that the leader can be regarded as an organizer when he, in the first place, is able to organize himself, his own personal labor, and, in the second place, is able to organize people in order to solve one problem or another or to reach the goals that have been set. The organizer is an alloy of self-organization and the ability to organize people.

In the opinion of his contemporaries, the ability to apportion time and to take advantage of literally every minute was typical of the work style of V. I. Lenin. If a leader has determined what to do and when, the discipline of those people with whom he must work becomes a decisive factor. Therefore V.

I. Lenin was distinguished by his demand for the strictest discipline. He regarded tardiness for meetings, failure to meet deadlines for presenting documents, and forgetting to keep promises as manifestations of the disorganization of the leader.

V. I. Lenin, when chairing meetings of the SNK [Council of People's Commissars] and the STO [Council of Labor and Defense], and when he was in presidiums of meetings and congresses, was constantly working: He conducted the meetings, wrote notes, and looked over business correspondence and notes. He was capable of a large amount of attention and a wide range of work that could be done simultaneously. Still, if one of the speakers unexpectedly addressed a question to V. I. Lenin, he reacted immediately. One felt that nothing escaped his field of vision.

V. I. Lenin's work day was filled to the limit: looking over the newspapers, a brief report from his secretary about current affairs and about the fulfillment of orders given on the preceding day, work on urgent letters and with business correspondence, the necessary negotiations on the telephone; the reception of visitors, familiarization with the agendas and materials for forthcoming meetings of the Sovnarkom (in 1918-1919 they took place almost weekly), holding meetings of the Sovnarkom, the Council for Labor and Defense, and the Politburo, speeches at these meetings, participation in the work of various commissions, supervision of the work of the Small Council of People's Commissars, perusal and approval of the decrees of the management meeting of the STO and Small Council of People's Commissars, writing business letters and telegrams, developing theoretical issues, looking over (with pencil in hand) magazines and books and speeches at conventions, meetings and congresses, and writing a multitude of business notes.

One must take into account, S. V. Brichkina noted, that, "Vladimir Il'ich had no assistants who could prepare materials for his speeches, articles and so forth. He did all the rough preparatory work himself."<sup>1</sup>

Vladimir Il'ich called his work tempo "furious." Some of his contemporaries regarded V. I. Lenin's work activity as "feverish management," which corresponded to the rapid and complicated events of the time, the need for a quick solution to the most varied questions of economic, military, party, soviet and cultural construction. "The development and coordination of issues took place at such rapid rates that it was difficult to find enough time for this."<sup>2</sup>

V.I. Lenin entered into any matter, into the discussion of any question, immediately, without any red tape. He was distinguished by the ability to translate the solution to any problem into the conditions of "rapid practice." Therefore the style of his notes typically include such words such words as "quickly," "extra quickly," and "very quickly," which he underlined two or three times.

Even during the periods when V. I. Lenin's health was deteriorating, he continued to work, although he arranged his day differently. In January-May 1922 Vladimir Il'ich was on sick leave and lived outside the city. There is

information about the productivity of his work during January 1922. He wrote 100 letters, notes and other documents. He worked out the draft of the thesis, "On the Role and Tasks of Trade Unions Under the Conditions of the New Economic Policy." This draft was accepted by the Politburo of the TsK RKP(b) [Central Committee of the Russian Communist Party (of Bolsheviks)] on 12 January 1922 and was published on 17 January 1922. He drew up the "Draft of the Directives of the Politburo of the TsK RKP(b) Concerning the New Economic Policy" (approved by the Politburo of the TsK RKP(b) on 16 January 1922). He thought out the articles, "Notes of a Publicist ..." (uncompleted) and "On the Significance of Militant Materialism."

Being personally an organized individual, V. I. Lenin demanded organization of others and instilled this necessary professional quality in managers. V. I. Lenin's works and speeches contain points regarding organization and the work of the manager which are appropriate even for today's administrative practice.

The manager must do nothing on impulse, under pressure or out of enthusiasm alone. In order to achieve the goals and tasks that have been set, it is necessary to have deliberate organizational work.

In order to manage successfully, it is necessary to support the process of administration organizationally: to distribute the work; to determine personally the duties, rights and responsibility for what has been done; to establish the time for performing the work; to develop a system of control over the implementation of the decisions that have been made. Without all this, in the opinion of V. I. Lenin, one ends with "organizational capriciousness and hare-brained organizational schemes."

The manager must conduct those affairs which require his personal participation and attention. He must be able to relieve himself of the burden of "trivia" (as V. I. Lenin put it, of "vermicelli") and maintain control over those affairs on which the course of the work depends.

The performance of any work or any assignment requires the establishment of time periods, and also methods whereby the manager can be informed about the performance -- by telephone, in writing, or with a personal meeting.

The ability to separate the most important from a multitude of economic, social and organizational tasks was typical of V. I. Lenin's work style. A number of V. I. Lenin's works, and among them "The Next Tasks of Soviet Power," were a reflection of this ability. It made it possible to concentrate in the proper place the necessary material, financial and labor resources and to provide for the implementation of all tasks. V. I. Lenin especially emphasized that "the entire art of administration and politics consists in promptly taking into account and knowing where to concentrate one's major forces and attention."<sup>4</sup>

Lenin valued highly the ability of managers "to raise the energy, heroism and enthusiasm of the masses, concentrating the revolutionary strained efforts on the most important immediate tasks," their ability to bring into action the sociopsychological resources which multiply all other kinds of resources and contribute to overcoming difficulties that exist.

Accounting for the connections between tasks and solving the main ones create prerequisites for general progress. Without solving the main problems it is impossible or rather difficult to solve any others. V. I. Lenin emphasized that it is necessary to have the ability "to find in each particular moment that special link in the chain which must be grasped with all forces in order to hold the entire chain and prepare for a reliable changeover to the next link, and the order of the links, their form, their connection, their distinctions from one other in the historical chain of events are not so easy to understand as they are in an ordinary forged chain."<sup>6</sup>

Analysis of the Leninist art of administration shows that when singling out the main tasks the manager must:

separate major tasks from secondary ones;

constantly check on the entire "front of the tasks," which makes it possible to see promptly the change in the importance of secondary tasks and their transfer to the category of major tasks;

to promptly resolve those secondary tasks which exert or can exert an influence on the course of the fulfillment of the main ones.

Many of V. I. Lenin's contemporaries were impressed by his ability to grasp the essence of a matter, the essence of an issue, and find simple, clear words to express them. There were cases when a professor or engineer, wishing to teach V. I. Lenin his business, after a conversation with him, discovered to their amazement that, on the contrary, V. I. Lenin had taught them to see the point of the issue.

This ability was also manifested in V. I. Lenin's manner of reading long written reports which, in the words of L. A. Fontiyeva, he usually began to read from the end, beginning with the practical suggestions. If the suggestions were good, then V. I. Lenin looked through the report from beginning to end. Even at that time he suggested a radical means of solving the problem of reading a large number of documents: write briefly, with a telegraphic style, presenting the essence of the question or matter.

Workers in the sphere of administration, as a rule, understand well the need to write briefly but, as usual, they are inclined to draw up bulky documents, these unique sons and grandsons of a great deal of administrative labor. The extreme viability of the habit of sending "upstairs" large volumes of paperwork is explained by the fact that "scant pages" can be regarded as a manifestation of an inability to work or an inability to present the "administrative commodity" to its best advantage. Only if brevity, clarity and practicality of the printed word are given primary value will it be possible to develop a habit of immediately presenting the essence of the matter or question and utilizing precise, clear, brief, that is, business language.

V. I. Lenin valued man's ability to present the essence of a matter in an oral presentation as well. He regarded lengthy and all-encompassing speeches of

speakers at meetings of the Sovnarkom as "an unproductive waste of time" and drew attention to the fact that the speaker should talk about the essence of the matter. If the question was clear, V. I. Lenin suggested giving only figures and practical recommendations.

Verbosity is the enemy of efficiency. The efficiency of a speech consists not in pronouncing many words which are about nothing specific, but in stating briefly the essence of a matter or a question. V. I. Lenin suggested reducing the flow of words that issued forth from the speaker with the help of regulations. In April 1919 V. I. Lenin wrote a note to the people's commissar of justice, D. I. Kurskiy:

"It is time to establish a general regulation for the SNK:

1. 10 minutes for those presenting reports.
2. 5 minutes for the speakers the first time and 3 minutes the second time.
3. They can speak no more than twice.
4. One person for and one person against, with 1 minute each.
5. Exceptions for SPECIAL decrees of the SNK."

This regulation was approved by the Sovnarkom according to a report of D. I. Kurskiy of 5 April 1919. When speaking, V. I. Lenin unwaveringly adhered to this regulation. He thought that a person reporting on any question can always use the time allotted to him in order to present the essence of the matter or the issue.

V. I. Lenin could not tolerate lengthy and empty speeches, or elegant phrases that substituted for business conversations. "Opinions" and "approaches" that lead further and further from solving the problem went against his grain. V. I. Lenin placed any issue that was significant for the construction of the new society on a practical basis, that is, he began to implement it. Typical words of Vladimir Il'ich were "to do and to do more." V. I. Lenin's ability to move things forward was reflected in all of the large economic campaigns in the first years of Soviet power: the nationalization of industry, the utilization of specialists, requisitioning of farm produce and tax in kind, the New Economic Policy, the fight against bureaucratism, one-man management in production administration, interrelations between economic agencies and trade unions, the GOELRO plan, the formation of the Gosplan, the development of competition, the attraction of foreign capital through concessions, the creation of trusts, and so forth. This style was adopted by our party and embodied in all of its works for guiding socialist and communist construction in the USSR.

Those who turned to V. I. Lenin for help in solving any management problem or in accelerating the course of work received an immediate response in action -- concrete support with people and material and monetary funds. For V. I. Lenin words were not separated from deeds. For Lenin, a word is primarily a means of resolving or accelerating a matter in practice. It was never a means of immediate placation, an unfulfilled promise or a postponement of something "until later."

V. I. Lenin attached special significance to the ability of a manager who has

taken on some matter to bring it to completion, to a tangible result.

There are managers whose style typically involves beginning things and then abandoning them half way through or forgetting about them in the "confusion of various phenomena." The main problem of these "beginning" managers consists in that they can work under favorable conditions. But as soon as difficulties or complications arise, all of their "turbulent efficiency" is manifested in the explanation of the difficulties and not in the surmounting of them. The person who carries out his business is the one who searches for means, and the one who justifies failures is the one who searches for causes of the failure. A businesslike finds the measure for evaluating a matter precisely in the practical results.

V. I. Lenin's business efficiency was distinguished by his precise knowledge of facts, figures and data. He demanded the same kind of knowledge of other managers and specialists. V. I. Lenin always masterfully established the guilt and debunked those who spoke with unsubstantiated statements and operated with statements of the type "it seems to me." "He could not tolerate general phrases, general considerations," notes A. A. Andreyev, "and he loved business efficiency, and the main things for him were facts."<sup>8</sup>

V. I. Lenin always carefully studied one question or another on the basis of various sources. One of his typical expressions was "it is necessary to penetrate." He penetrated into economic questions, discussing them with specialists, with managers and with rank-and-file workers. This provided support, substantiation of leadership, justification for statements and proof of points. G. V. Chicherin emphasized that V. I. Lenin insisted on precision in his work. "Any assertion must be precisely substantiated and any generalization has to be precisely presented."<sup>9</sup> Studying the facts, figures and data, opinions and practical experience gave V. I. Lenin the opportunity to speak with any person in a "language of knowledge" which is correctly called businesslike.

V. I. Lenin valued working time highly. He loved punctuality. He himself was never late and he never forced anybody to wait for him. His secretary, L. A. Fontiyeva, noted an interesting detail: "Vladimir Il'ich thought that a clock that was even 1 minute slow or fast was no good, and he would not use it."<sup>10</sup>

V. I. Lenin was precise when he indicated the day and hour for receiving one worker or another. V. A. Smol'yaninov, who worked as deputy manager of affairs of the Council of Labor and Defense for questions of economic and management construction, wrote: "Vladimir Il'ich was not in the habit of making anybody wait for him (he considered this to be disrespectful to the person)."<sup>11</sup>

There is a generally known case of speakers who have spent a long and torturous time waiting for "their hour" in the room next to the meeting room of the Sovnarkom. V. I. Lenin brought order into this matter, and ordered that the speakers arrive 15 minutes before the issue was to be discussed. And the issues on which reports were to be made were the first to be placed on the agenda of the meeting. This is now a classical organizational method.

The principle of "communications at telephoning distance" which was typical of V. I. Lenin's work style was introduced into practice at that time: before the meeting of the SNK, the secretary called the speaker on the telephone and clarified where he would be by the beginning of the meeting. After approving the agenda for the SNK the secretary notified the speaker of the time of his report.

V. I. Lenin thought that the ability to value time should be inherent in each manager since the creation of a system based on the realization of the law of economizing on time depends on the manager. Meetings of the SNK under the chairmanship of V. I. Lenin were great lessons in instilling this ability.

V. I. Lenin always opened the meeting punctually, regardless of the number of people in attendance. The secretary entered in the minutes the names of those who were late and how late they were. A person who was late was given a reprimand which was entered in the minutes. And V. I. Lenin would accept no excuses related to "objective factors."

Tardiness of administrative staff workers is one of the most widespread illnesses, which can and must be cured. The person who suffers from this illness is one who "steals time" from people who value time and hold it dear. To put an end to this kind of theft is the task of each efficient and organized manager.

Developing the ability of managers to check on and control implementation, V. I. Lenin began meetings of the Council of Labor and Defense with information about the implementation of decisions that had been adopted. Those who were guilty of tardy or unsatisfactory implementation of decisions "kept their distance" from Vladimir Il'ich. Nothing disturbed V. I. Lenin's equanimity as much as inefficiency, a lack of conscientiousness or violations of party and state discipline. In these cases, A. A. Andreyev notes, "He did his utmost to make a spectacle of such a worker and demanded the severest punitive measures."<sup>12</sup>

A distinguishing feature of Lenin's control and checking on execution was not only the discovery of cases of sluggishness, irresponsibility, inefficiency, red tape or bureaucratism, but also a special study of the existing system of organization of work, the arrangement of the matter, that is, the organizational and administrative support for the problems that are being resolved. In this connection, V. I. Lenin considered it necessary and expedient to "disclose" and show the inability of one manager or another to arrange and organize work, that is, whether it was necessary to render practical assistance to him.

An important part of Lenin's lessons is the personal participation of the manager himself in the supervision and checking on execution. Such expressions as "check on it personally," "I demand that you increase personal observation," or "verify this personally" were typical expressions in Lenin's requirements and instructions. When giving one instruction or another, V. I. Lenin inevitably demanded or drew attention to the need to communicate about execution in verbal or written form.

The manager who limits his activity to issuing written orders or instructions is an "idealist in administration": he thinks that everything "from below" takes place or should take place in the way it was intended. The manager more than anyone else should be a materialist, that is, he should inspect what happens in fact, how the work is actually going. To give the decisions that have been made over to an arbitrary fate is a kind of inefficiency in the sphere of administration. V. I. Lenin condemned those managers who "... give the greatest counsel and guidance instructions, but turn out to be <sup>13</sup>ridiculously, absurdly, shamefully 'helpless,' incapable of realizing this advice and these instructions, of exercising practical control to make sure that words are transformed into deeds."

In order to successfully carry out any job, it is necessary to be devoted to this job. The job will not tolerate "devotion with reservations": I give something of my "self" to the job, and I leave something for myself, for my "soul." To devote oneself to a cause means to devote all of oneself, one's personal interests, to the interests of the cause. Only under this condition is it possible to fight for the cause, to defend it, to advance it and bring it to completion, that is, to be a businesslike person.

In the words of G. V. Chicherin, V. I. Lenin was "entirely imbued" with the principle of the prevalence of business considerations and the interests of the cause over personal interests. This was felt so strongly that in communication with V. I. Lenin, "it was simply awkward to refer to any <sup>14</sup>personal considerations when speaking about the interests of the cause."

One of the possible situations in the process of management is the transformation of discussion of the matter into mutual attacks. V. I. Lenin was greatly irritated when "a personal squabble was brought into business, when business arguments were replaced by personal attacks and squabbles; when instead of speaking about business, people spoke about personal indignation <sup>15</sup>or the personal qualities of one or another of the participants in the matter." The appearance of such situations is a kind of random element which hampers the cause. Therefore V. I. Lenin always strove to subordinate the "energy of personal complaints" to the interests of the cause.

Efficiency and organization are among the most important and concrete features of the Leninist style of management, and they have not only socio-economic, but also political significance. It is possible to acquire and develop these features in the style of each manager and in the work of the administrative staff only through constant and unwavering improvement of practical activity. V.I. Lenin's recommendation concerning the need to "work unsparingly on the creation of discipline and self-discipline, on the strengthening everywhere of organization, order and efficiency ..." <sup>16</sup> is perceived as a commandment.

#### FOOTNOTES

1. "Vospominaniya o Vladimire Il'iche Lenine" [Recollections of Vladimir Il'ich Lenin], Vol 3, Moscow, Politizdat, 1969, p 409.

2. Ibid., p 475.
3. Lenin, V. I. "Poln. sobr. soch." [Works], Vol 39, p 46.
4. Ibid., Vol 40, p 85.
5. Ibid., Vol 39, p 305.
6. Ibid., Vol 36, p 205.
7. Ibid., Vol 50, p 274.
8. "Vospominaniya o Vladimire Il'iche Lenine," Vol 4, Moscow, Politizdat, 1969, p 28.9. Ibid., p 414.
10. Fotiyeva, L. A., "V. I. Lenin -- rukovoditel' i tovarishch" [V. I. Lenin --Leader and Comrade], Moscow, "Znaniye", 1973, p 18.11. "Vospominaniya o Vladimire Il'iche Lenine," Vol 4, Moscow, 1969, p 356.
12. Ibid., p 28.
13. Lenin, V. I. "Poln. sobr. soch.," Vol 35, p 202.
14. "Vospominaniya o Vladimire Il'iche Lenine," Vol 4, Moscow, Politizdat, 1969, p 417.
15. Ibid., Vol 4, p 417.
16. Lenin, V. I. "Poln. sobr. soch.," Vol 36, p 80.

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## DIRECTOR COMMENTS ON RESPONSIBILITIES OF HIS POSITION

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian  
No 10, Oct 83 pp 16-33

[Article by G. A. Golovanov, general director of the Apatit Production Association, deputy of the USSR Supreme Soviet, Hero of Socialist Labor, doctor of technical sciences, professor (Kirovsk): "At the Head of the Collective" conclusion of article begun in No 9 for 1983]

### [Text] Does Science Need Us?

I think that there are many unsolved problems in certain areas of applied science, particularly in mining science, in which I am involved. I even get the impression that the scientific and technical revolution which, undoubtedly, is playing a decisive role in the development of the branches of our industry, has somehow had a lesser effect on the improvement of mining equipment and technology.

As early as the middle of the last century the technology for breaking down rock with explosives had taken form in its general outlines, and at the end of the century we had technology for mechanical crushing and pulverizing of the ore that has been extracted. The flotation principle of enrichment was introduced at the beginning of our century. And all these processes have remained almost unchanged up to the present.

I have thought many times about why in our day we are not realizing cardinal technical ideas, as we have in past years when the fireworks of technical thought transformed mining enterprises. And each time I have come to the conclusion that it is because science is separated from the concrete tasks of production and is not responsible enough for the real effect from conducting scientific research and experimental design work. As before, there is a serious break in the chain of "research -- development -- introduction."

Naturally, during the course of scientific research there can be successes and failures, upsurges and declines of creative activity. Nobody is protected against this. But to raise failures to the rank of a scientific triumph by saying that a poor result is, in the final analysis, also a result means at least a careless attitude toward nationwide funds. It turns out to be a lottery at which one cannot lose.

Recently, when justifiably accusing the managers of one of the scientific design institutions of a lack of positive results from the research and design developments that had been conducted in the area of automation of mining technological processes, I received an answer. The essence of it amounted to the fact that the negative results that had been obtained made it possible for the researchers and developers to eliminate from further research one of the paths to achieving the goal that had been set. But believe me when I say that it is difficult for the production worker who has spent a million rubles on this to agree with the correctness of such a concept. This path is too long, unreliable and costly. Moreover, it is not inappropriate to emphasize that, unfortunately, in such cases nobody bears personal responsibility even in the sense of prestige, not to mention material responsibility. This is what happened in this concrete case. There was a regular reorganization of this firm, and its former managers were dissolved into the mass of other scientific workers from which they were extracted, and under these conditions it was quite impossible to make the appropriate complaint. But even if this institution had continued to thrive even up to the present, neither it nor its managers would have borne material responsibility anyway.

Certain managers of scientific research institutes and design bureaus are inclined to accuse industrial enterprises of a lack of desire to assimilate new technical equipment and technology. Well, there is undoubtedly some justification for these accusations. Anything that is new, including in technical equipment, frequently encounters resistance, and certain managers are afraid of the additional efforts which are inevitable when assimilating new technical equipment and which impede the fulfillment of the current production program.

But in the overwhelming majority of cases the reasons lie in something altogether different. If new machines or better technology are actually a significant step forward, if their introduction will produce a clear economic effect which will be manifested in concrete material terms, I think that any enterprise will adopt such innovations without thinking about either the additional load or the additional expenditures. Technical equipment in general, and new technical equipment in particular, should satisfy certain needs of the society and it should not exist at the expense of the society. If this is the case, its introduction, in my opinion, will not cause any difficulties.

I have already said that not very many innovations have appeared in the area of mining technical equipment and technology in recent years. At the same time the level of equipment that is utilized and technology that is supplied is gradually ceasing to correspond to the constantly growing demands of mining production. Development is most frequently proceeding as a result of increasing the unit capacities of equipment and improving traditional technology, and not on the basis of principally new inventions and discoveries that make it possible to increase labor productivity several-fold.

The existing situation does not evoke a feeling of special concern on the part of researchers and developers. Frequently they either continue to include in regular plans for scientific research and experimental design work subjects which interest them particularly and sometimes also personally, or they come

to the production workers and borrow their ideas for themselves. Naturally, in neither case are real conditions created for a new leap in technical equipment or technology.

A person whose well-being depends on defending a dissertation (and this has become a goal for certain comrades) tries to minimize the risk. Risk is dangerous for him and therefore he selects a particularity, a local improvement of technology that has been developed.

Naturally, I am talking from the position of a production worker, although before becoming a doctor of sciences I devoted a good deal of effort to scientific work in the area that is close to me -- the enrichment of minerals.

Therefore, perhaps, I have a certain right to make such judgments. Incidentally, one question arises of its own accord here: What motivated me, a person overloaded with production work, to engage in science and defend a dissertation? I can answer with a clear conscience: it was neither the prestige nor the material aspect of the issue, since scholarly degrees have not changed my job position and have practically not increased the earnings of the director.

I had one goal: to increase my professional knowledge to the level placed on me by production as the director of a rapidly developing association which had special significance. There was one other goal. The degree of doctor of sciences makes it possible for me to arrange more independently and confidently my interrelations with the managers of scientific institutes and design bureaus with whom we have business connections. I do not have to allow them to give us "rough" ideas, underdeveloped designs of machines, and so forth.

I am far from the idea of stating that every eminent economic manager must have a scholarly degree, but at the same time I am absolutely sure that his scientific and technical knowledge must necessarily correspond to the knowledge of highly qualified scientific workers.

With my statements about applied science I certainly did not intend to cast a shadow on it, for its merits are generally known and cannot be cancelled out by any considerations. But there are still enough shortcomings in the system of interrelations between the developers and the consumers so that they cannot be ignored.

#### Not Always the Same Logic

I do not think that in the future the director will be able to be replaced by a computer which makes decisions on the basis of the rules of formal logic. A great deal in the activity of the director goes beyond the framework of ordinary logic and is based on intuition and resourcefulness. For example, was it rational to retain in Kirovsk the wooden buildings of prewar construction that did not have the appropriate conveniences?

From the standpoint of common sense and the interests of the present -- yes. If only as temporary housing. The more so since it was still possible to live

in many of the buildings. In one way or another the housing still makes it possible to maneuver when solving the housing problem. And there are those who wish to live in a larger space in a less well-built building.

But by making such a decision we would have proceeded directly toward a kind of social inequality: in one brigade, on one shift and in one section people with equal qualifications would be working, but some of them would have modern housing while others would be living in poorly built apartments. This, of course, would not contribute to creating the proper work climate, without which it is unthinkable to have normal functioning of the production organism.

We made a different decision -- to remove all the wooden buildings in the city although this led to a temporary reduction of the quantity of housing allotted for distribution under the policy of the existing sequence in the production subdivisions of the association.

Of decisive significance in this extremely complicated problem was the evaluation of its sociopolitical consequences. We decided that it was better to live in well-built housing with less space than in a large apartment that was not well built. In this case no small role was played by the instructions of party agencies. Now, when Kirovsk has been transformed into a modern city, nobody has any doubt about the correctness of the decision that was made.

It is undoubtedly necessary to explain one's actions and decisions. But sometimes the director encounters the alogicality of others' actions. Here it is important to be prepared for this psychologically, and not lose one's own orientation.

In the 1970's a decision was made for us to construct an entire complex of structures for producing new products, whose estimated value amounted to several tens of millions of rubles. Without discussing the details of this entire story, I will only say that the higher planning agencies and a number of officials participated in it. But the order for the construction was finally signed by me. Thus I assumed the lion's share of the responsibility for the decision that was made.

Considerable human and material resources were concentrated in the construction of complex, which made it possible to assimilate all of the estimated allocations. But this complex did not produce a single ruble's worth of final product, since subsequent events showed that at the time of the startup of the complex the country no longer had a need for these products.

How should the director act in such a situation? One cannot give a general recommendation. It is necessary to look for a more acceptable approach. And we found a temporary solution. The complex was adapted for producing our main product -- apatite concentrate. True, under the conditions of ordinary renovation of an enrichment factory for obtaining this million tons of apatite it would have been necessary to have only one-fifth - one-sixth the amount of money. Thus several tens of millions of rubles were utilized inefficiently.

At first glance this unintelligent administrative decision has a clearly expressed organizational form. But this is only the external side of the

matter, and the internal one lies in the sociopolitical sphere, since the administrative decision which led to the inefficient utilization of capital investments and the freezing of state funds stands in direct contradiction to the internal policy of our party and state.

The fact that the funds were not spent in vain placates us and inspires confidence. We are confident that the day is not far off when this complex will produce its own products which, according to our calculations, are needed in our national economy even today.

Another example. When developing the plan for expanding one of the mines of our association, in conjunction with the general planner, we adopted a decision whereby, in order to purify mining waters, we intended to construct in the area of one of the lakes a dispersion dam, and not structures which make it possible either to purify the waste waters completely or to utilize them as recycled water. The consequences of this poorly thought-out decision appeared fairly quickly. Now the lake into which the mining water is discharged after conventional purification has an unattractive appearance, although 5 or 6 years ago in this lake there were about 500 million cubic meters of ideal drinking water. Now we must exert considerable efforts to eliminate the consequences of the short-sighted decision. This requires significant expenditures of time and money.

Thus an incorrect technical decision led to negative social consequences, since this directly involves the interests of people, their health and their well-being. Logic oriented toward the current economic effect led to considerable subsequent losses. Even now such short-sightedness is fairly widespread, and the director must remember this and arrange his behavior correspondingly.

I have given examples in which the consequences of decisions that were made appeared significantly later. This can serve as a justification to some degree. But it is possible to give examples in which the decisions that have been made lead to negative results practically immediately. Usually these take place with unsatisfactory personnel work.

I am ashamed to recall the leapfrog effect I caused in 1977 when I appointed and transferred the chiefs of three underground mines. Without analyzing this case from the standpoint of general condition of the personnel policy, I will simply say that I was out for a rapid effect. But the transfers caused a good deal of moral harm both to the managers who were transferred and to each collective. The negative consequences appeared almost immediately since these actions are characterized by a short chain, "decision -- people," as distinct from decision regarding technical re-equipment, where the chain, "decision -- technical equipment -- organization -- people," is mediated and less obvious.

I am deliberately focussing on examples of negative consequences of decisions. While they are rare, they cause extremely unpleasant and harmful results. The moral aspect is extremely important here, and even more important is the political aspect, which we sometimes forget. Correct and just decisions of directors imbue people with confidence in the correctness of the party management policy and create new impulses for highly productive labor.

Knowledge of tested rules of administrative activity and automatic adherence to them replace for the director the need to be guided only by considerations of common sense, which also distinguishes the dilettante from the person who has qualifications.

A couple of words about conferences. Any of them must take place in a working situation and they must end with some decision, or else they are conducted in vain. But this is far from always the case. Conferences sometimes last for hours, and the decisions that are made are vague, like amorphous precipitation.

In my opinion, the length of a conference should be limited to 1 hour, and only in the rarest cases -- to an hour and a half or two. My experience enables me to assert that after an hour of work the labor productivity of the participants in the conference decreases by approximately 20 percent, and after 2 hours -- by 30-40 percent. At least that is what happens with me. If it is impossible to resolve the issue under consideration within this time period, it is necessary to reconcile oneself to this. It is better to arrange another conference and prepare for it by utilizing the results of the first conference and also the necessary additional information.

I am convinced that there are no issues that cannot be resolved within the course of two conferences of an hour and a half each. If this does not happen it means that the problem being considered either must be resolved by a principally different method, or an unrealistic task has been brought up at the conference.

Naturally, a conference is fruitless without clearly formulated results, but I wish to add to this a generally known assertion. The urgency and significance of the problem being considered are not always understood on the basis of logical evidence which is brought out at the conference. It can turn out that visual methods, and not verbal arguments, are decisive.

I shall explain this with an example.

About 5 years ago an alarming situation arose at the purification installations of one of the enriching factories which occupy an area of about 100 square kilometers. At least this seemed to be the case when inspecting the surface of the land of individual facilities of these installations. A keen sense of danger which had been developed by many years of work in the position of a manager caused me to go up in a helicopter in order to make a more detailed evaluation of the state of affairs.

What we saw from above surpassed all of our fears. The structures were in such an emergency condition that, without immediate measures, within 2 or 3 months the factories might remain but the association would be deprived of 70 percent of its production capacities. Having returned from the flight, I immediately held a conference with the participation of a number of association managers under my jurisdiction, informed them of what had happened and suggested that they take immediate measures to eliminate the emergency situation.

The problem was extremely complicated. And this was not so much from the technical standpoint as from the standpoint of material support for the necessary work. It was necessary to have up to 1,000 tons of large-diameter steel pipe, several kilometers of rubber hoses, and so forth. All this had to be obtained additionally in the middle of the year when all of the funds had been expended and orders were not being accepted. My instructions were met, to put it mildly, without enthusiasm. I saw that the main reason for this attitude was not so much the difficulty of the problem as that the comrades in attendance could not get a visual picture of the great danger of the situation that had arisen. In this situation the order would have been carried out formally since the force of the order consists not in what the manager has said, but in how it is perceived by the person who is to carry it out.

Understanding this, on the next day I went up in the helicopter again, but this time with the comrades on whom the elimination of the emergency situation directly depended. There was no need for another conference. Having seen the situation with their own eyes, all of them were imbued with a single desire to implement the necessary complex of measures as quickly as possible. Within a couple of hours a schedule was developed and approved, the work was started immediately, and within 2 months, after an immense amount of work, the situation was normalized. Thus the psychological factor was utilized effectively to the advantage of the cause. No persuasion or verbal proof could have mobilized the collective as effectively.

In the work of the director it is necessary to organize efficiently the reception of the visitors and conversations with them.

I am an opponent of the "open door" policy, whereby every visitor can drop in on the director at any time and regarding any issue. I am firmly convinced that this leads to a disturbance of the work rhythm of the manager and to a useless waste of working time. It is necessary to determine clearly the list of issues which the director considers during the course of individual conversations.

Conversations can be held both on the initiative of the manager and on the initiative of the subordinate. In the former case their goal is usually to obtain information necessary for making a decision, job instructions and, finally, the consideration of issues related to hiring, job transfers or punishment. Of course there can also be other topics of conversations.

Notifying subordinates beforehand about the purpose and time of the conversation is an indispensable condition for conducting it productively. The visitor, on his part, must notify the director ahead of time about the purpose of his visit. Incidentally, the director sometimes prepares for the meeting more than the visitor does.

I usually adhere to the rule of strictly following the provisions we have established for considering complaints and requests. But in real life there are cases when the director departs from such a rule. I recall one time when a recently married couple came to me. They did not have their own housing and they had to move into a hotel temporarily since, according to the existing rule, families could not live in the dormitory. They asked to be allotted a

room in a well-built building out of turn. They began to explain the details. It turns out that both of them had worked in the association for less than a year and they were not even on the list for housing yet. All this gave me a legitimate justification to refuse the request and advise them to wait for housing under the general conditions or to find private dwelling space. Ordinarily that is what I do.

But this time something kept me from making that decision. The reason for this was probably the unusually gloomy appearance of the young man. It turned out that the chap had had a difficult childhood which had ended with an early conviction of a crime. But he had found it within himself to complete secondary school and acquire the specialty of an electrician. Then came service in the army, his discharge, the girl he loved, and marriage. Through the conversation came his phrase that if he could not find housing he would go in search of better places. It was also necessary to see the face of the young woman. In her eyes there was unconcealed terror, fear of losing the family that had just been created.

I decided to violate the existing provisions concerning the allotment of housing. I called the chief of the housing and municipal services administration and ordered him to find a room for this family out of sequence, and until that could be done, he was to pay for the hotel room as for an ordinary dormitory room. Recently I became interested in the fate of this couple. And I was very gratified. The family had increased by one young person, the young parents are working, and both of them are shock workers of communist labor. Through my act, even if it was not altogether legitimate in the given situation, I retained two good workers for the association. This is the best result.

We do not always manage to follow the rules for punishments for failure to fulfill instructions either. Some people think that to enter a low number in the system for keeping track of efficiency and discipline, and then to give the punishment from the sum of the points are all that is needed. This is a manifestation of formalism, and in an area where it should not exist. A decisive aspect for the experienced manager is an analysis of the essence of the causes of the failure to fulfill instructions.

The most frequent causes are the lack of the necessary information or an incorrect perception of the instructions that have been received. Then come inadequate preparation of the worker for carrying out the task that has been set for him, the desire to avoid an unpleasant assignment, a careless attitude toward his duties and, finally, a criminal action.

Depending on the aforementioned causes, one should make a decision of an official or unofficial nature. To punish a subordinate who has committed a job error either because he has inadequate information and cannot obtain it or as a result of an incorrect understanding of the orders because they were not given clearly, or, finally, because of poor occupational training -- is harmful and incorrect.

In this case it is the duty of the manager to eliminate all obstacles as quickly as possible and to create a normal work situation. Negligence on the

part of a subordinate (if it is a regular thing) is rectifiable for the most part, although this requires considerable efforts on the part of the manager.

The situation is more complicated when one encounters job misdemeanors which have occurred because the worker is devoted to alcohol.

For a long time I have had to maintain special supervision over the activity of the manager of one of our services who has this weakness. He knows about the increased supervision and this is enough so that his weakness does not cause harm to the business.

For another manager these measures have turned out to be inadequate, and therefore it was necessary to take a somewhat unusual step. I prepared an order for firing him, told him about the order, and put this document in the safe, warning him that if he deviated from the norms of behavior, the order would immediately go into effect. This measure produced a positive result.

Another production manager had to be fired anyway, since the measures taken, both official and unofficial, failed to produce the desired results.

Briefly, in addition to formal punishments which are envisioned by our legislation, we must also make extensive use of unofficial measures which can turn out to be more effective for a particular group of people or specific situations.

I should like to emphasize one peculiarity which must be taken into account in the practice of imposing punishments. One cannot utilize punishments which cause harm to the human worth of the offender. In this case the normal interrelations between the superior and subordinate are violated.

I recall a case from my practice about 10 years ago. The chief of one of the administrations, a woman, had serious omissions in her work. I called her in and made the appropriate remark in a sharp tone, although it was one that was completely permissible between a superior and a subordinate. But I completely failed to take into account the fact that the person before me was first of all a woman, and second of all, the manager of a division who had committed an offense. The conversation unexpectedly resulted in real tears and great indignation, precisely because of the tone of the address and not because of its content. I had to apologize and, in another tone, a softer one, explain the essence of the mistake she had made and the gravity of the possible consequences. I never again had to make any remarks to this division chief regarding this issue or to express dissatisfaction with her work.

It was then that I came to a conclusion for myself that the form of the conversation, under comparable conditions, should be different with men and with women subordinates. By strictly adhering to this rule I was subsequently able to avoid many unpleasant situations.

A more pleasant official function of the manager is the practice of rewarding subordinates for good performance of their duties. It is very important to be sure to provide encouragement for a well performed assignment or creative performance of job functions that goes beyond the scope of ordinary norms.

It is known that the instructions envision forms of encouragement whose effectiveness depends directly on the degree to which the manager avoids formalism. Unfortunately, one rarely has occasion to read in the orders from higher organizations about rewards for subordinates who have creatively fulfilled specific production or socio-economic assignments. And this is largely determined by the style itself, the approach to incentives. Incidentally, this pertains also to evaluating the work of the director himself, for whom such an evaluation is no less of a reality than the plan or the condition of the technology. One must remember that the style is evaluated as a whole, and not on the basis of individual successes or failures.

The style of the activity of the director also predetermines other organizational forms of his work. As we know, the working place of the director is his office where he, like any other worker, must spend most of his working time, and it is also here, in the majority of cases, where he must produce his main product -- decisions. Only here can he regularly obtain the necessary and systematized information from all channels. Of course, if it is necessary for him to be in the shop, in the underground mines or at the railroad station -- he must go there immediately. But at the same time the director must remember that people evaluate the style of his activity as a whole, frequently without taking into account the logic of individual actions. From the outside it is not apparent why he acts the way he does; one notices only how he works; only the style of his work can be seen, and not the methods whereby he solves individual problems.

#### Informal Relations and Personal Example

Contacts outside of work between the manager and his subordinates have an essential influence on business relations. I am expressing my personal opinion regarding this, although I am convinced that many people will disagree. I think that the director's contacts outside of work should be exceptionally limited. Being drawn into frequent meetings with subordinates outside of work leads, as a rule, to an arbitrary creation of an informal group of workers who try to exert influence on the director in the direction which they desire. Such influence turns out to be especially negative when the contacts, whether they be an evening card game or a celebration of a birthday, a group fishing trip or a picnic in the bosom of nature, are accompanied by the corresponding libations. It is a very short distance from here to the appearance of "favorites" and familiarity, that is, factors that lead to a disturbance of the normal functioning of the collective. It sometimes happens that even the next morning the director sits at his desk trying to think of how to keep the promises he had made at the dinner table....

At one time, when working as the director of the Kovdor mining and concentration combine, not yet having much practical experience and ignoring what was said from above, I not only experienced unpleasant pressure from my subordinates, but also made many mistakes as a result of this. Only then did I gain the firm conviction that solving job problems in an informal situation is a satisfaction that is too costly.

Contacts outside of work can also have another negative side. They create preconditions for all kinds of "out-of-school" conversations, which result in rumors, conjectures and all kinds of predictions, and sometimes they are completely unfounded. If such undesirable phenomena arise anyway, the director must take immediate measures to localize them.

Personally, I have practically no contact with subordinates during nonworking time. This is a heavy psychological load, and I cannot recommend this style of behavior to every manager. I just want to note that this variant of fighting against potential complications in administration is quite realistic.

I shall give this example. About 7 years ago, the person who was deputy head engineer of the association at the time committed a serious amoral crime. In and of itself, this case caused a certain amount of harm to the authority of all managers of the enterprise. But harm that was many times greater was caused by delay in making a disciplinary decision against the person who had committed the offense. Rumors snowballed, one more improbable than the next, although many knew that the delay in the order was caused by completely objective circumstance. Only an extremely harsh order and the fact that, as an exception, it was posted for general view, put an end to the uproar. I think that the negative consequences could generally have been reduced to a minimum if the order had been issued, as they say, "while the iron was still hot."

From this unpleasant case I drew for myself a very serious conclusion concerning the practice of punishments. Although this practice is an effective instrument in the hands of the manager, it is a finely tuned instrument which requires skillful handling.

The main thing in the system of punitive measures is still not the punishment itself, but the readiness of the administrative system to react correctly to each offense, large or small, which could go without the proper attention. Here the offense should be considered and evaluated in such a way that not only will the offender not do anything of the kind in the future, but nobody else will risk doing such a thing either. This educational element of punishment belongs to a sphere which is not taken into account by the instructions or provisions, that is, to informal relations.

A couple of individual remarks.

Except in rare cases, the director should not allow his children to work at his enterprise, especially those who have completed higher educational institutions. Ignoring this rule can cause serious difficulties for the director in his work and irrectifiable harm to the children who, whether they desire it or not, are put in a privileged position as compared to their coworkers.

Nor should the director allow his wife to influence his job duties, since this influence is usually subjective and thus has a negative effect on the moral atmosphere in the collective. It would not have been necessary to discuss the last remark but, unfortunately, these cases exist in life.

Naturally, like every working position, the director's office should meet certain requirements. It usually corresponds to the style of the manager, the nature and volume of production, and, to a certain degree, it is a signboard of the enterprises. For many visitors to the association, including workers from other enterprises, scientists and foreign guests, before becoming familiar with shops, go to the director's office and here is where they gain their first impression of the enterprise. True, this is not the major aspect of the matter.

The main thing is that the office should be convenient to work , for which it is necessary to have, first of all, reliable interurban and intra-urban communications, and also reliable communications with the subdivisions, the leading managers and the functional divisions and services, which have made it possible to conduct many-sided conversations. Next to the office it is desirable to have a small room for rest and conversation of a confidential nature.

In the office there should be nothing superfluous, which could distract the director himself from performing his job duties and distract visitors from the business conversation. At one time I had occasion to make several visits to the office of the rector of one Leningrad institute, and each time I left with the feeling that I had visited a museum or an antique store. Only after that did the details of the just completed conversation begin to penetrate into my memory.

But I have also had occasion to see offices that were so stark and, the main thing, so inconvenient for working, that my only desire was to leave as quickly as possible.

It might seem that the subjects I have touched upon here are trivial, as it were, superficially related. But this is an incorrect idea. People perceive a director and judge him in terms of a multitude of indicators, including external manifestations. And the perception a director both by his subordinates and those with whom he works sometimes plays a role that is no smaller than, for example, the level of utilization of modern technical means in administration.

An indispensable condition which also characterizes the moral image of the manager is his cautious attitude toward alcoholic beverages. I am far from the idea of preaching asceticism, an autonomous dry law, but moderation in the consumption of alcohol should be mandatory for the director. I have known extremely promising directors of enterprises who, because of their weakness for alcoholic beverages, have failed at the matters entrusted to them and have lost their positions.

At one time I had occasion to take over from such a director matters related to the administration of one mining and enriching combine, and I saw with my own eyes the harm that this manager had caused the collective, both in terms of management and especially in terms of morale. Unfortunately, there are quite a few examples of this even now. Therefore alcoholic beverages should be consumed only once in a while, and even then the director should always be able to make an absolutely sober decision.

A couple of words about the problem of smoking. I am convinced that at some time in the future our society will be a society of nonsmokers. In the end it cannot but be the case that prudence will gain the upper hand over a stupid, albeit pleasant, habit. At first, probably, people of certain professions will stop smoking, particularly physicians, teachers and educators in children's institutions. Then all the rest will.

Regarding this problem I shall give my opinion which, undoubtedly, will find many opponents. I think that directors should not smoke. This will not only make it possible for them to protect their own health, but will also serve as a good example for others. For preaching any principles, even the most noble, without reinforcing this with a personal example, is nothing other than profanation. I express this idea not because I myself have not smoked for a long time, but because I am absolutely convinced that I am right.

Incidentally, the majority of the managers of the association who comprise the board do not smoke. I certainly do not intend to ascribe this to my own example, but I am convinced that this is to a considerable degree the result of the overall attitude toward smoking that has come to exist in the association.

It should be said that the authority of the director also depends on many factors which would seem to be insignificant at first glance. These include the way he dresses, his haircut, whether or not he is clean shaven, and so forth.

There is no doubt that the director should always be dressed neatly, and in keeping with the latest fashion. But at the same time it is quite inadmissible for the director to be distinguished from his closest subordinates by his clothing. When the manager's clothing stands out, this immediately causes a negative reaction from his subordinates. There are discussions about the fact that the director has special privileges, that he is allowed to do what others cannot do, and so forth. Briefly, an atmosphere which is unfavorable for the director can be created in the collective. This is precisely what the director should avoid in his activity.

I recognize that the remarks printed here, which are extremely uncoordinated, far from exhaust even a small part of such a complicated subject as the activity of the modern economic manager. I am also convinced that quite different judgments and recommendations can be made regarding the questions that have been touched upon. But if my remarks render even a small amount of assistance to my colleagues who have just taken on the difficult duties of the director of an industrial enterprise, I will consider my task fulfilled.

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## ACADEMY JURIST EXAMINES ECONOMIC REFORM OPTIONS

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian  
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[Article by Candidate of Legal Sciences B. P. Kurashvili of the USSR Academy of Sciences State and Law Institute, Moscow, under the rubric "Improving the Economic Machinery": "The Fate of Sector Management"]

[Text] The 26th party congress and the CPSU Central Committee November (1982) and June (1983) Plenums set a task of tremendous historical significance -- that of ensuring a decisive transition to predominantly intensive economic growth factors, accelerating scientific and technical progress, and improving the standard of production organization. In the current decade the country's national economy must take a qualitative leap forward and reach new horizons of economic and social efficiency.

In his speech at the CPSU Central Committee June (1983) Plenum Yu. V. Andropov said:: "In our social development we have now reached the historical stage where profound qualitative changes in production forces and a corresponding improvement in production relations have become not only urgent but inevitable. That is not merely our desire, comrades; it is an objective necessity and there is, so to speak, absolutely no avoiding it."

Can the established system of national economic management be preserved any longer in the face of such changes? Hardly. The management system cannot but undergo substantial changes when what is being managed is changing qualitatively. This is a truly objective necessity which will, sooner or later, carve itself a path.

Of course general considerations like this are not enough when the question of a substantial change in the system of national economic management is being formulated. This is a concrete question that requires concrete analysis of the existing situation. Such an analysis has been in progress for many years at party congresses and CPSU Central Committee plenums and in science and journalism. Many very substantial shortcomings in the management system have been exposed and presented for public examination. They are all associated in one way or another with the present sector system of management. It has been stated clearly and unambiguously that "our work to improve and restructure the

economic machinery and the forms and methods of management has fallen behind the demands made by the level achieved in the material-technical, social, and spiritual development of Soviet society."\*

#### The Multidepartmental Approach and Intensification Factors: One "Pro" and Five "Cons"

Despite all the historical services of the present system of sector management, it cannot provide scope for the operation of the intensive development factors that characterize production today.

Of course it would be an oversimplification to think that the existing system has no basis in the structure and dynamics of production. This basis is the growth in the scale of production of individual products or groups of related products. When the volume of output of a given product and the number of enterprises in the sphere concerned become significant, as soon as the new "sector" is deemed "important," a new department is created to manage it. More than 50 USSR ministries and other departments (all-union and union-republic) are currently involved in sector management in the national economy. But does it necessarily follow that production specialization leads, as it has become customary to believe, to management specialization at the level of state organs? No, strictly speaking it does not follow. Of course, the fact that things have turned out that way in practice does not mean that this will always be so. The relationship between the present system of sector management and many factors in present-day production is, to put it mildly, complex. What are these factors? They include the following.

First -- the diversification of production and integration between sectors within the basic level of the production organism. Within the framework of a single enterprise (hereafter we will not add on each occasion, or production association) it is becoming increasingly advantageous to combine production facilities belonging to different sectors. This leads ultimately to waste-free production in fewer stages and promises tremendous economic and ecological benefits. At the same time the present sector management system is very far from taking this factor into account.

A fairly typical example: By-product raw materials which are valuable but "not our specialty" will be sent to the dumps like useless rock by, say, an enterprise that extracts apatites. Is it a coincidence that the directive adopted in 1973 on the creation of diversified production associations has gotten bogged down in the departmental labyrinths? At the same time there is no such thing as sector "purity" in departmental economic systems. So as not to be dependent on inaccessible or careless suppliers, enterprises acquire a "subsistence" system of supply production facilities, usually semi-amateur. Diversification? Sorry, that's not it. Necessary diversification is held back but its unnecessary semblance, which is senseless from the national economic viewpoint, is spreading....

\* Yu. V. Andropov, "Karl Marx' Teaching and Certain Questions of Socialist Building in the USSR," KOMMUNIST, 1983, No. 3, p 13.

The second factor -- the technical and technological retooling of production on the basis of scientific achievements -- also, as a rule, cuts across sectors. Extensive related groups of highly specialized technical systems and technologies are based on the same scientific-technical ideas and design solutions. But large-scale technical innovations are held back by the fact that departments orient their own scientific institutions toward the preferential solution of problems narrowly confined to the sector and display a heightened commitment only to ongoing improvements in the sector-based production.

The third factor is the rationalization of the territorial structure of production and the harmonious formation of territorial national economic complexes as relatively independent elements of the country's unified national economic complex. This too suffers strong negative effects from departmental fragmentation.

Side attention has long been drawn to such phenomena as the desire of sector management organs to keep under their own direct jurisdiction enterprises which it would be expedient to hand over to republican and local organs; poor collaboration locally between enterprises belonging to different departments (instead of direct contacts, by the shortest route, they communicate through their "own" ministries in Moscow); and the inadequate coordination of the actions of republican and local organs in developing the production infrastructure which is common to them all.

The fourth factor is the "human" factor. This multifaceted factor is the most important in the analysis of any system of social management. The scientific and technical revolution seems at first glance to refute, but in reality reaffirms -- with new force and largely in a new way -- the law that the decisive role in production, and particularly in intensive production, belongs to the working person -- both the direct production worker and (now more than before) the organizer.

Many justified complaints have been made in the press against departments: they incorrectly and at times senselessly restrict the financial autonomy and socialist initiative of enterprises. But the whole point is that the present sector departments act in the way that is natural for them. They were and are organs of direct management of their own "projects," the embodiment of the maximum centralization of management, the champions of the command style. This is in their blood, and we can hardly count on their being able to change their nature.

The fifth factor is the increase in the controlling role of the consumer in the economic machinery. The periodical press has long been publicizing many instances where the consumer's interests and the criteria of social usefulness in general are ignored: where materials-intensiveness is inflated for the sake of fulfilling the plan in terms of volume, where construction delays arise from the fact that "advantageous" work is carried out while "disadvantageous" work is postponed, where the plan for the product mix is not fulfilled, where too much stock is accumulated, where the production of cheap goods is reduced or halted and costly goods are "substituted," and so forth.

Sector departments, which by virtue of their status as state (state!) organs should safeguard society's interests, are conducting the struggle against phenomena of this kind sluggishly and reluctantly, being unwilling to cut off the branch (the percentage of plan fulfillment) on which they are sitting together with their enterprises. When the activity of a sector department and that of its subordinate enterprises is evaluated on the basis of the same indicators, this cannot fail to lead to elements of "vertical mutual aid." Will the transfer of economic ministries to the autonomous financing system not give a new boost to this practice and provide legal cover for it?

So five of the six factors cited that promote intensification and increased production efficiency have no common language with the present sector management system. To some extent these factors force their way through the barriers of the departmental system (to the extent to which it benefits from them or yields to pressure), but in most cases they are sacrificed to various "objective" factors and circumstances. The departmental system is clever and shrewd in its own way and it cannot easily be taken in hand. Its vitality is striking. Is it, perhaps, necessary to resolutely demand that departments take account of all production intensification factors, to exercise tougher control, and then -- will success be assured? I think that would be yielding to an illusion. The present system of sector management has in principle outlived its usefulness.

#### Self-Regulation and Management

Sector management is not, in general, the main, leading element in the system of management of our national economy. But it has gained excessive significance in our life. The main bulk of management apparatus workers are concentrated in sector departments. Whether they want this to happen or not, the hypertrophied role in the management system -- what the CPSU Central Committee November (1979) Plenum described as the "departmental onslaught" -- suits them, and they avoid plunging into the turbulent sea of transformations to sink or swim.

There is nothing wrong with the fact that many workers in the sector apparatus regard the existing situation as reasonable. What is wrong is that any project for improving the economic machinery and the national economic management system is measured against the existing sector management system: Is it compatible with it, and thus with the interests of sector departments, or not? It is the ministries themselves that make a judgment on this in the first instance. And the result of their assessment is predetermined. This is a paradoxical situation: The present system of management urgently needs improving -- and it is itself the most powerful force for inertia in this matter and in the development of the management system in general.

The response to this situation should not take the form of trying to affect sector management and the sector apparatus as little as possible in projects for restructuring the management system. The transformation of sector management can only be considered in conjunction with changes in the status of the enterprise. Conversely, changes in the enterprise's status can only be put into practice if there is a simultaneous change in sector management.

Changes in the management system will remain superficial reorganizations if the enterprise's status is left virtually unchanged. The main question is how to tackle the fundamental basis of the national economy -- the production activity of labor collectives. Reforms must be directed not toward making things convenient for the management apparatus -- though practical convenience must also be considered -- but toward creating increasingly favorable conditions for labor collectives, releasing their energy and socially useful initiative, opening up scope for the professional skill of every conscientious working person, and increasing the social activeness of working people.

The 26th CPSU Congress devoted great attention to long-term prospects as well as to the ongoing improvement of management. According to the congress, what is most in accordance with the present stage of the national economy's development is the "widening of the autonomy [samostoyatelnost] of associations and enterprises and the rights and responsibilities of economic leaders," accompanied by the formation of an "appropriate economic atmosphere and organizational and management relationships"\*. These words, reaffirmed at the CPSU Central Committee November (1982) Plenum, are profoundly significant.

Widening the autonomy of enterprises is a major, special issue. Let us mention just the most important aspects here.

First and foremost, it is a question of relative autonomy. Naturally, "the version of self-management which tends toward anarchosyndicalism is profoundly alien to us"\*\* Ownership by the whole people (by the state) remains immutable, and the supremacy of the state in determining the main conditions of the operation of the production organism is retained. The real widening of the enterprises' autonomy takes the form of wider powers in the sphere of planning their own production and economic activity, real, full financial autonomy (including autonomy in "vertical" relationships), and the right to resolve specific questions of production organization at their own level. Experiments conducted in our country involving the operation of a management system based on broad autonomy for labor collectives have yielded positive results. Such a management system is being implemented in other socialist countries, first and foremost Hungary and Bulgaria. It could be claimed that this is a general trend in development arising from the nature of socialist production relations. It is worth dwelling on this matter in more detail.

Production relations are widely regarded as an abstraction applicable only to the most general characterization of economic realities. At the same time the resolution of urgent problems of management of the national economy, including problems of sector management, is associated with an understanding of the controlling role of production relations.

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\*Materials of the 26th CPSU Congress, Moscow 1981, p 51

\*\*Yu. V. Andropov, "Karl Marx' Teaching and Some Questions of Communist Building in the USSR," KOMMUNIST, 1983, No. 3, p 19.

When people speak of enterprises' autonomy, what they have in mind is that within the wider or narrower limits "bequeathed" to it by the state management, an enterprise freely manages its own production and economic activity -- that is, according to its own will, in accordance with its own interpretation of the economic situation, it takes decisions aimed at maximizing the profit and other benefits permitted by law. Does this mean that within these limits the enterprise operates outside all control? No. In the field of freely established economic ties, an enterprise's actions are governed by controls of another type (other than directives). I refer to economic regulations -- the system of economic levers and incentives as an expression of production relations.

State management neither creates nor removes socialist production relations, it only intervenes indirectly, more or less adequately (through legal controls and other means of exercising state authority). If it does this inadequately, then there are greater difficulties involved in putting socialist production relations into practice.

The so-called "shadow economy" arises. There is no need to dramatize its existence in itself, but the trend toward an increase in the scale of the "shadow" economy and the erosion of individual components of the "official" economy by elements of the "shadow" economy is an alarming sign. When this trend appears, it is an indication of lowering of the level of control of the national economy \*

The specific relationship between the two different types of control depends on historical conditions. Normally this relationship is such that state management operates only where and to the extent that the self-regulation machinery fails to guarantee the interests of society as a whole. As F. Engels noted in his famous article "On Authority," "authority and autonomy are relative, and the sphere of their application changes with different phases of social development," but as a general rule "the social organization of the future will tolerate authority only within the limits inevitably prescribed by production conditions...." \*\* Here the word "authority" [avtoritet] also denotes the socialist state power [vlast].

In the transitional period from capitalism to socialism, and later in the situation of the approach of World War II, the war itself, the postwar restoration, and the "cold" war, an economic machinery became established that was oriented toward the maximum possible degree of statism and centralization of national economic management. At the time, this was largely inevitably prescribed by the economic and sociopolitical conditions in which production was taking place. The self-regulation system was reduced to a minimum. The main props of state management were prescriptive planning based on the principle of apportionment [razverstka], and a large network of narrowly specialized sector departments capable of putting that apportionment into practice. Now the situation has radically changed. Now the order of the day

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\* T. I. Zaslavskaya, "Economic Conduct and Economic Development," EKO, 1980, No. 3.

\*\* K. Marx and F. Engels, Works, Vol 18, pp 304-305.

is to extend the autonomy of enterprises, that is, the sphere within which the objective machinery of self-regulation is directly active. This means that "authority" -- including the sector department form of authority -- must retreat to within the reasonable limits inside which it really is "inevitably prescribed by production conditions."

The main avenues of the restructuring of national economic management, intertwined in a single tight knot, are now clear in general terms. The first such avenue is the widening of the autonomy of enterprises and of production (in the broad sense) organizations in general. In essence it is a matter of extending the sphere of self-regulation of production and economic activity to the extent to which it is directly determined by socialist production relations. The second is the corresponding reorientation of state management: restricting interference in enterprises' direct activity and concentrating on strategic issues. The state must be responsible for those matters which it sees more clearly, which are more easily subject to its influence, but which elude the self-regulation machinery. The third is to ensure the maximum economic relevance of the means, methods, and forms of state influence on economic life. Authoritative state influence on economic processes and production and economic activity must not lose its sociopolitical content and become purely economic, but it must "rid itself of all attempts to manage the economy by methods which are alien to the nature of the economy."\*

It is from these standpoints that the problem of restructuring the sector management system should be examined.

### Three Programs for Improving Sector Management --Which Is Best?

Many options could be proposed for improving the sector management system. Apparently they can be reduced to three possibilities.

The first is stabilization. The essence of this can be expressed in the words: "Improve everything while changing nothing." Interdepartmental coordination is developed within the framework of the existing sector departmental system, which is retained. A number of state committees or "superministries" could be created for groups of similar or interrelated sectors. In any event, everything possible is done to extend direct contractual ties between enterprises, associations, scientific and technical institutions, and other institutions belonging to different departments, and if necessary their efforts are combined through comprehensive intersector targeted programs.

Practice shows that departmental barriers can be overcome only partially by this means. It is clear that coordination links between organizations which preserve their "loyalty" to their own department's interests and their orientation toward departmental indicators cannot be free from great difficulties. While the present system of sector management exists and until

Yu. V. Andropov, "Karl Marx' Teaching and Some Questions of Socialist Building in the USSR," KOMMUNIST, 1983, No. 33, p 13.

such time as a decision to restructure it is adopted, in management practice it is, naturally, only possible to adhere to the standpoint of stabilization and think about utilizing all the reserves inherent in the existing structures.

Within the framework of the stabilization program, the most far-reaching decisions are those adopted in May 1982, first and foremost the CPSU Central Committee and USSR Council of Ministers resolution "On improving the management of agriculture and other sectors of the agro-industrial complex." These decisions combine in a unique way, on the one hand, the creation of a single organ of management of the multisector national economic complex, and on the other, the preservation of narrowly specialized sector departments and their systems. The first of these features is oriented toward the future, the second relates to the present. The decisions of the CPSU Central Committee May (1982) Plenum are an important indication of the insufficient efficiency of the present sector management system.

The second program is one of moderate restructuring. Its essence lies in substantial amalgamation [ukrupneniye] of sector departments. It is quite possible to imagine the national economy (not including the sphere of circulation) being managed not by the present 50 or so sector departments, but, for instance, by 9 -- ministries of fuel and energy industry; metallurgy; machine building; light, timber, and chemical industry; construction; municipal services and communications; agriculture and food industry; transport; and a state committee for defense production.

It goes without saying that this program could only be implemented given a considerable widening of the autonomy of enterprises and associations and thus a sharp reduction in the volume of unnecessary centralized operational management of them. So what is suggested is not the kind of amalgamation whereby a single ministry would be formed to replace several, but where the ministry's system would include the same number of main administrations which would manage their own "projects" on the same old principles; the suggestion is rather more serious than that.

The third program is one of radical restructuring. A possible version of this could appear as follows. State management of the national economy is concentrated as much as possible. The management of material production is concentrated in four departments: the ministries of the national economy (only a rough title); municipal services and communications; and transport; and the state committee for defense production.

Obviously in this case the amalgamation of departments managing the sphere of circulation and the sociocultural sphere will also become inevitable. It is also clear that the creation of a ministry of the national economy will entail restructuring the functions of the Gosplan so that it concentrates on problems of general planning of the country's social and economic development. This should be borne in mind in evaluating the program for radical restructuring: After all, it is important to know in what general structural context it is proposed that the ministry of the national economy and the other sector departments should operate. The key measure in this program, however, is the

creation of the ministry of the national economy (or to give it another name -- also not completely accurate -- the ministry of material production).

It is suggested that the USSR ministry of the national economy will manage the material production under its jurisdiction as a single integrated sector within the system of division of social labor. As an organ of state -- that is, sociopolitical -- management, it will pursue the goals of ensuring the maximum social usefulness of production. It will not be excessively cumbersome, because, on the one hand, the extension of the enterprises' autonomy will lead to a sharp reduction in the volume of work in operational management of the enterprises on the part of the state, and on the other hand, the main bulk of this kind of work, insofar as it will continue to be necessary, will be taken on by republican and local organs of the ministry. Real potential will at last emerge for concentrating the centralized state management on strategies for economic development.

The ministry of the national economy will have the status of a union-republican department. The republican ministries of the same name and the national economy administration of the local soviets (which will be under dual jurisdiction -- vertical and horizontal) ensure the territorial integration of material production (the "integration effect"!), having under their direct jurisdiction all the enterprises located in the territory in question (with very rare exceptions). This system will make it possible to make use of the germ of rationality which was present in the system of soviets of the national economy [sovmarkhoz] in 1957-1964, without reviving its serious shortcomings in connection with the weakening of centralization of sector management.

Which of the three programs mentioned promises the best organization of sector management? The reader will perhaps defer drawing his own conclusions until he has studied the next section of the article, which discusses the functions of the suggested ministry of the national economy and its organs. But here (by way of "food for thought") is the answer that was received in one poll of experts.

In May 1982 a Georgian Communist Party Central Committee Plenum was held to discuss the question of accelerating scientific and technical progress in the republic's national economy. On the eve of the plenum, a poll of its 185 participants was carried out. One in six of those polled was a member or candidate member of the Central Committee, the others were people invited to take part in the plenum. Slightly over half of those polled were workers on party and state organs, leaders of major enterprises, and other practical workers, while slightly less than half were leaders of scientific institutions and important scientists. The questionnaire included this question, among others: how can departmental barriers in the path of scientific and technical progress be overcome? The possible answers mentioned and briefly described three possibilities -- those mentioned above.

Thirty-seven people (19.5 percent) refrained from making the difficult choice between the alternatives, 67 people (36 percent) chose the stabilization program, 52 (28 percent) went for the moderate restructuring program and 30 (16 percent) preferred the radical restructuring program [figures and

percentages as published]. The distribution of replies in the groups of practical and scientific personnel was roughly the same.\* What do these figures show? First, that hopes of reform outweigh the feeling of certainty that stabilization gives. A relative majority of those polled (44 percent against 36) and an absolute majority of those who answered the question (easily calculated to be 55 percent) favored the restructuring of sector management -- the widening of enterprises' autonomy. This result is all the more indicative in view of the fact that during the preparations for the plenum periodicals only discussed the measures which could be adopted within the framework of the existing management system, there having been no consideration of the possibility of restructuring it. Second, the replies show less readiness for a radical restructuring. Although it is true that the fact that it was favored by one in six of those polled and by one in five of those who replied can be seen as substantial support.

Moderate restructuring has certain obvious advantages over radical: less demolition, a gradual transition to the new management system, the possibility of an easier return to tougher state management if need be. But moderate restructuring as a half-and-half approach has serious shortcomings, economic ministries will endeavor to manage "their own" enterprises in accordance with the old command principles, that is those we have at present (a single national economy ministry would not be able to do this). The problem of managing regional (territorial) complexes would not be satisfactorily solved either. Most likely, in time, one would have to switch to the radical concentration of sector management -- this would mean yet another restructuring with inevitable flaws.

Moderate restructuring is not bad in existing conditions, but it is not the best step in the development of sector management. The best step in our view is radical restructuring. To appreciate the nature of it you have to have a general picture of the content of the hypothetical USSR national economy ministry's activity.

#### The Functions of the National Economy Ministry and Its Organs

Let us assume the program for the radical restructuring of sector management has been adopted and the national economy ministry and its organs have been set up. What should its functions be, given that the reform will radically alter the status of the enterprise as the basic element of the production and economic system.

T. M. Dzhafarli, Sh. L. Kistauri, B. P. Kurashvili, and V. P. Rassokhin, "Some Aspects of the Acceleration of Scientific and Technical Progress," SOTSILOGICHESKIYE ISSLEDOVANIYA, 1983, No 2, pp 61-62.

Hungary provides an example of this kind of planning. According to the 1972 Law on National Economic Planning "the Hungarian economy is a planned economy based on socialist production relations." The state adopts long-term, medium-term (5-year), and annual (current) plans. The conformity of the production and economic activity of the enterprises and economic organizations to state plans in general is "not guaranteed by apportionment." The law goes on to say: "The activity of economic organizations must accord with the aims laid down in the national economic plan. An economic organization's plan is laid down by the director after listening to working people's views; in the case of cooperatives it is laid down by the general assembly." It also says that when they draw up their plans economic organizations take their contract connections into account." [quotemarks as published] A state organ has the right to demand of a subordinate economic organization that it act in accordance with the overall aims of the state plan, but it has no right to pass down specific, obligatory plan targets. It influences enterprises by using the means of economic regulation stipulated by the 1977 law on state enterprises: the right to determine an enterprise's sphere of activity when it is founded and supervisory powers as well. Prescriptive planning only comes into play in special cases. A planned economy with a prescriptive system can be introduced to control economic processes in all national economic spheres under a state of emergency and other special economic measures (military economy) can be introduced for defense purposes.\*

Logically and taking this experience into account, the planning function can be performed in the USSR national economy ministry's system in the following way. The national economy ministry elaborates draft long, medium, and short-term (annual) plans for subordinate sectors of material production, they are approved as part of state plans for the economic and social development of the USSR and are allocated to national economy ministry republican and local organs. Enterprises adopt their plans independently. National economy ministry organs use various methods of ensuring that enterprise plans accord with state plans. These organs determine the enterprises' main spheres of activity for the given planned period (this means that a particular product or group of products will constitute a particular proportion of net output, and no less than that). Having received, in the preplan period, enterprises' draft plans drawn up on the basis of their order books, the national economy ministry organ recommends, on the basis of the overall situation (which it should know better than the enterprises; they, in turn, should have a better idea of the dynamics of their customers' specific needs), certain amendments to the drafts. Finally (and chiefly), the national economy ministry organ tells the enterprises what kind of output it will encourage and on what terms, on the basis of investments, credits, tax concessions, and other economic means.

Having dispensed with the need to plan absolutely everything, organs involved in state management of the national economy will be able to plan the solution of large-scale national economic problems on a selective basis, that is, make full use of the method of targeted program planning.

\* Hungarian People's Republic. Constitution and Legislation. Moscow, 1982, Progress Publishing house.

The drawing up of all-union, republican, and local targeted programs will be a very important form of state planning.

The planning process will involve the complex interaction of three elements -- the specific producers, the specific consumers, and the national economy ministry organs representing the interests of society as a whole and territorial communities. The drawing together and coordination of the interests of these elements will ensure that the plans are realistic and balanced and will ensure ultimately the fullest satisfaction of public needs in the given circumstances. It is the attainment of this degree of satisfaction and not various formal indicators which will be the criterion for assessing the work of the national economy ministry and its organs.

The essential prerequisites for effective planning will be created by the maximum centralized performance by the ministry of the national economy and its organs of the FUNCTION OF INVESTIGATING THE ECONOMIC SITUATION, including accounting, creating and operating a unified information system and subsystems, and assessing the current state and forecasting the directions of the development of production forces, scientific and technical progress, and the domestic and world market. The initial data for an adequate picture of the movement of material production will be obtained by national economy ministry organs, in particular on the basis of the compulsory registration of enterprises' plans.

The ministry of the national economy will have the widest horizons for practical investigation of economic life and different economic situations. The encompassing of the general and indirect consequences of millions of production and economic actions directly reflecting the dynamics of social needs and exposure on that basis, of underlying trends of national economic development will bring together the state power authority of the ministry of the national economy and its organs and the authority of full, authentic knowledge. This will be the best possible way of helping improve the level of control in the basic sphere of social life.

Naturally, the ORGANIZATION OF THE PRODUCTION APPARATUS, geared to the actual formation of a unified national economic complex for the country as a whole and regionally at all levels -- from administrative rayon to economic region covering several republics or oblasts -- will play a very important part in the system of functions performed by the ministry of the national economy and its republican and local organs.

The creation of a ministry of the national economy, unlike the moderate amalgamation of sector departments, not to mention the organization of different interdepartmental commissions within the framework of a stabilization program, is, we believe, the only proper way of cleansing material production of the "plague of departmental parochialism"\*, at all levels of management, beginning -- and this is most important -- at the enterprise level.

\* M. Mikhaylov. "Concerning Departmental Parochialism," KOMMUNIST, 1981, No 8, p 105.

In the case of apatite extraction, which we have already discussed, when you have moderate amalgamation you cannot expect an enterprise to be able to freely combine its main activity, which is concerned with chemical production, with the organization of nonferrous metallurgy production units. Or, in another case, combining steel casting with the production of construction materials from slag. Or the extraction of oil shale with the use of gangue in road building. The combinations can be very unexpected and all or nearly all of them will be "native" to the national economy ministry's system.

Similarly, department barriers will be cleared from the path of coproduction by groups of enterprises.

Cooperation ties (preferably though not necessarily within the framework of a particular region), in particular where the formation of associations for specific functions is involved, will be established by enterprises at their own discretion and national economy ministry organs will contribute organizationally and economically to the establishment of ties ensuring the solution of priority tasks.

As far as they are able on a regional scale and certainly on a countrywide scale, the national economy ministry and its organs will have to prevent individual enterprises from having a monopoly of a particular market of products destined for production or social consumption and prevent individual enterprises from taking advantage of the fact that goods they produce are scarce. These tasks will be solved by, in particular, an appropriate investment policy. The creation of new enterprises will basically remain the prerogative of the national economy ministry and its organs.

It is very important to talk ABOUT SCIENTIFIC AND TECHNICAL POLICY. It is part and parcel of sector production specialization and the implementation of it will preserve -- in a fundamentally different form from the present one -- the sector-based structure of the managerial apparatus. Sector management, with specialization by national economic sector, will involve specific, uniform production units at all enterprises, not groups of related enterprises (a sufficiently "pure" sector cannot be formed on the basis of enterprises because they are generally multisectorial). The aim of this management is the scientific, technical, and social (in the sense of the conditions and creative content of labor) progress of the relevant production units.

The USSR ministry of the national economy will have direct charge of a network of scientific research and planning and design institutions narrowly or broadly specializing in a product or production technique and they will help the formation and implementation of scientific and technical programs geared to the development and eventual production of new products, the technical and technological retooling of relevant production units and, ultimately, the improvement of labor productivity and maximum satisfaction of society's needs in terms of a particular sector's products. Nothing else is needed, it seems to us, in this sphere of management.

The function of the national economy ministry and its organs which involves the HANDLING OF MATERIAL, TECHNICAL, AND FINANCIAL RESOURCES will be

exceedingly crucial and complex. It is this function that will ensure the implementation of economic methods of management (state-power, "administrative" in form, economic in content).

At the moment the use of the national [obshchenarodnyy] (state) property in production and circulation is regulated by the law of "operational management" (not an entirely straightforward term, unfortunately). According to Article 21 of the Principles of Civil Legislation of the USSR and Union Republics (this article is reproduced in Article 94 of the RSFSR Civil Code and in the Civil Codes of the other union republics), "state property allocated to state organizations is under the operational management of those organizations which are implementing -- within the limits determined by the law and in accordance with the aims of their activity, plan targets and the function of the property -- the rights of ownership, use, and disposal of the property." The hypothetical changes in the planning system will require a new version of this article although essentially it will remain unchanged.

The ministry of the national economy and its organs will have to proceed on the basis not of unconditional (within the limits laid down by the law) but of broad property autonomy for enterprises and other "state organizations" which will be given "operational management" of part of the common fund of state property. One new aspect, as has been proposed on a number of occasions, should be the introduction of an economically valid payment for practically all the state property given to enterprises, including land and mineral raw material stocks, in order to prevent the mismanagement of "free" property.

A very substantial part of the common fund of state property will be concentrated in the hands of the national economy ministry. The non-gratis placing of state property at the disposal of enterprises, economic incentives for their production and economic activity in decisive areas, clever handling of spare funds throughout the national economy, and the provision of resources for targeted programs -- all this will constitute the basic ingredients of the state-power actions of the national economy ministry and its organs.

Making state management of the national economy an economic process will also effect the national economy ministry's performance of the FUNCTION OF MONITORING THE DEGREE OF LABOR AND CONSUMPTION. The aim in this sphere is to establish a system of distribution ratios arising naturally out of a situation where enterprises' production and economic activity actually is fully financially autonomous. V.I. Lenin's well-known ideas on financial autonomy and distribution according to labor await consistent implementation.

The state will lay down only the minimum wage level and the size of grade increments, while the actual wage level will be determined by the enterprises themselves and will depend on production efficiency and on labor productivity and the working person's labor contribution. This presupposes the possibility of substantial differences in pay for the same work, this having an incentive effect, and differentiation between enterprises and between working people which comes under the heading of labor competition. The size of payments into social consumption and production development funds should also strictly depend on production efficiency -- this directly or indirectly establishes the

level and structure of consumption of material and spiritual benefits.

As the full representative of the owner (society organized into a socialist state) the national economy ministry and its organs will collaborate with labor collectives in implementing CADRE POLICY, above all in the appointment of enterprise leaders.

In the new management conditions the labor collective will have a vital interest in ensuring that production efficiency is real and not just for show and, therefore, that skilled and honest personnel are in charge. The law on labor collectives adopted in June 1983 recognizes the need to a degree, envisaging as it does the enhancement of labor collectives' role in appointing leaders and monitoring their activity. In time the election of enterprise leaders will probably be introduced (as is the case at the team level). But, at the same time, one must preserve the decisive role of national economy ministry organs, specifically their approval of leaders elected by the labor collective.

THE LEGAL ESTABLISHMENT AND FORMULATION OF SOCIALIST PRODUCTION RELATIONS is basically a matter for the representative organs of the state which adopt laws. But the ministry of the national economy, as an organ of state administration, will also have to perform a significant norm-creating function -- elaborating draft laws and government resolutions and also independently adopting departmental normative acts.

Clearly, it will be primarily a matter of the concrete elaboration of two associated legal institutions on the basis of the present legal institution of "operational management" -- the law of production and economic disposal and the law of state-power disposal of property in state hands. Lawyers are already talking about the need to elaborate these two institutions (under slightly different names, but this is not important). This question becomes exceedingly relevant in connection with the restructuring of the management system on the basis of widening enterprises' autonomy. It is necessary to ensure that the law of national [obshchenarodnyy] (state) ownership remains intact and to provide scope for its utilization, above all the chance to manipulate property in the course of production and economic activity.

Much work will have to be done to regulate the system of state planning and the system of economic contract ties (including those between enterprises and state organs) and in other areas. Norm-creating powers can be granted to the national economy ministry in the reasonable certainty that the ministry, unlike the current sector departments, especially financially autonomous ones, will not feel entitled to safeguard departmental interests to the detriment of national [obshchenarodnyy] interests.

This certainty, based on the hypothetical objective position of the ministry of the national economy in the system of economic ties, a position which will not give it a motive for "vertical mutual aid" with subordinate enterprises, extends also to the function of SETTLING DISPUTES (between manufacturers and consumers, between enterprises and working people and so on). The scale on which the departments managing the national economy perform this function

remains very large despite the existence of a nondepartmental system for settling disputes (state arbitration, the courts). The significance of its proper performance, especially at the initial stage when the new management system is being introduced, is obvious.

This necessarily incomplete survey of the functions which would be performed by the hypothetical national economy ministry and its organs (which number around 170 at republican and oblast level) enables one to conclude that this department will be perfectly capable of managing the greater part of material production -- given a judicious sharing of managerial work with enterprises and their associations. And if a single ministry can cope with the task there is no need to have a larger number of ministries.

The June (1983) Plenum of the CPSU Central Committee talked of the program task of reducing and simplifying the managerial apparatus. The solution would emerge naturally from a more sensible management system.

### Is An Experiment Necessary?

Can the proposed sector management reform be verified experimentally? Theoretically, yes. For instance, you create ministries in two or three union republics and national economy administrations in several oblasts, these organs are given charge of all or nearly all the enterprises in their areas, the production and economic autonomy of the enterprises is widened, while the present sector departments have charge (insofar as this remains necessary) of their "own" enterprises via republican and local organs which do not have a synonymous equivalent at union level. On a theoretical level this can be done. But it is easy to see how difficult it would be to translate the instructions of a multitude of superior ministries into rational managerial decrees addressed to enterprises. And, which virtually clinches it, to what extent existing sector departments will be committed to making it an authentic and successful experiment.

Without ruling out, however, the possibility of an experiment (if special steps are taken to guard against obstacles), obviously one must concentrate on elaborating a detailed and thorough plan for the restructuring of sector management as an integral part of the plan for the overall reform of the national economic management systems. The use of experimental models and consultations with experts in the course of planning can give the conclusions greater clarity and authenticity than actual experiments when some of the requisite favorable conditions are lacking. It should also be borne in mind that actual social experiments sometimes postpone the pressing solution of problems and on occasions people deliberately use them as a means of shelving projects, a means "updated in the spirit of scientific and technical progress."

Furthermore, people who display the seriousness of their approach to the solution of pressing problems by referring to the need for an experiment sometimes forget about the "gifts of history," modern history at that -- the experience of other socialist countries and this experience is worth a multitude of experiments.

It is often said that these countries are small compared with the USSR and that their experience is therefore not a guide. But I believe that this is particularly useful as a guide. If excessive statism and centralization of management get in the way of production intensification in small countries in which economic ties are easier to encompass, then in a large country this style of management is even less suitable. A large-scale national economy and its unamenability to tight centralized state management is a further argument in favor of the proposed restructuring. The chief argument is the need to give powerful socioeconomic factors, the only factors capable of playing a decisive role in production intensification and in the sharp improvement of production efficiency, room to express themselves.

In his speech at the meeting with party veterans Yu. V. Andropov said that the tasks set by the recent party congresses in the sphere of economic development are "still far from being fulfilled." "Evidently, a factor in this was our lack of vigor in searching for ways of solving new tasks, our frequent use of half-measures, and our inability to overcome the accumulated inertia quickly enough." It does not follow from this, of course, that any solution which is not a half-measure is automatically correct, but it does mean that a radical solution must be sought.

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## MOSCOW'S CHIEF PLANNER INTERVIEWED BY EKO

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian  
No 10, Oct 83 pp 58-76

[Interview with V. V. Bitunov, chairman of the Moscow Gorplan, winner of the USSR State Prize, candidate of economic sciences, by L. D. Belyayeva: "Moscow: Experiment in Comprehensive Urban Development"]

[Text] In Moscow and Leningrad, to concentrate attention on renovation and technical re-equipment of enterprises, to increase their specialization in the production of items of a high technical level and quality, to provide for more complete loading of production capacities, to increase labor productivity more rapidly than the production volume, and to envision further comprehensive development of city management.

From the "Basic Directions for the USSR Economic and Social Development During 1981-1985 and the Period up to 1990"

[Question] A typical feature of our time is the rapid growth of cities and, as a result, the search for new, more effective forms of planning and control of their development. Plans for comprehensive development of cities, in which a large city is regarded as a special economic formation with its own specific conditions, have become a constituent part of national economic territorial planning. What are the peculiarities of Moscow as an object of planning?

[Answer] Moscow occupies a special place, being distinguished from the other largest cities of our country not only by its size, but also by the great influence it exerts on the development and functioning of the entire USSR national economy. The specific features of Moscow are conditioned by its role as the capital of the first socialist state in the world. The RSFSR is the largest of the Soviet socialist republics. Three percent of the country's population live in the capital, and concentrated here are a considerable proportion of the industrial production, housing, cultural institutions, scientific institutions, and so forth. Moscow has a multilevel economic structure, which is conditioned by the existence here of central agencies of union, union-republic, republic, oblast and city levels of administration, and

enterprises and organizations under the jurisdiction of various departments. Peculiarities of Moscow's economy include its multibranch nature, developed external ties, and extensive division of labor.

[Question] How do the peculiarities of Moscow which you named affect the selection of an approach to planning the capital's development?

[Answer] A city is always a national economic complex. But the conditions for the functioning and development of cities frequently differ sharply. If a city is created around a large enterprise (Volgodonsk, Naberezhnye Chelny and others), the plan for economic and social development of this enterprise, approved by the branch agency, is essentially the basis for the development of the entire city. Still, such a plan cannot be called comprehensive, for it does not take into account a number of aspects of the vital activity of the city.

There are larger cities, the plans for whose development are formed by generalizing the plans of all the enterprises and organizations located on their territories. After consolidation with the plan for city management, one obtains a summary plan for the development of the entire national economic complex of the city. But even such a plan, although it is independent with respect to the plans for individual enterprises, has been developed by more than one planning agency and is usually a mechanical sum of the plans, which frequently account differently for the same conditions that exist in the city. Such a plan cannot be considered comprehensive either. It might be called, rather, a conglomerate plan.

[Question] So what is a comprehensive plan? What makes it necessary to change over to this form of planning?

[Answer] A comprehensive plan is one which has been developed by a single planning agency, which encompasses all aspects of the production-economic, social and cultural life of the city as they are interconnected and mutually conditioned, and takes into account all the specific conditions of the development and functioning of the given city.

The comprehensiveness of a plan means primarily a combination of the branch and territorial approaches. An analysis of the experience in developing Moscow shows that much is being done in haste within the framework of individual branches. But branch planning cannot be effective if it is not augmented with territorial planning. A number of problems can be resolved successfully only with the participation of local planning agencies. These include, above all, efficient utilization of labor resources, which is closely coordinated with the construction of new enterprises and the expansion and renovation of existing ones. The ispolkoms of the local soviets of people's deputies should develop long-range and annual balances of labor resources, and participate, with the ministries and departments, in drawing up the plans for providing the enterprises with labor force. This was envisioned by the July (1979) decree of the CPSU Central Committee and the USSR Council of Ministers concerning improvement of the economic mechanism.

In the process of economic development, economic ties between enterprises and organizations of one region are strengthened. They gradually form into a territorial system which becomes the same kind of element of the national economy as the branch systems are. A regional economic complex is formed, whose development is the object of the territorial plan.

The plan for the economic and social development of Moscow can be called comprehensive in the full sense of the word. It encompasses a large group of indicators. As a result of this, the complexity of their mutual coordination increases. The need for changing over to new methods for working out the plan for the development of the capital is brought about both by the general tendencies of the growth of cities and by the peculiarities of Moscow, one of the largest cities in the world. When drawing up a comprehensive plan it was necessary to coordinate the proposals of the branch ministries with the interests of the city's development. It combines into a unified whole the production and social aspects of the city's vital activity: transportation, housing, cultural and domestic services, and so forth. Moreover, as I have already noted, central and republic administrative agencies are concentrated in Moscow. And the interests of individual ministries and departments do not always coincide with those of the unified national economic complex of Moscow.

Extremely favorable conditions for highly effective production are being created in the capital. This is determined by a number of factors. A large number of skilled workers are concentrated here. And because of the fact that leading enterprises, institutes and planning and design organizations are located nearby, the best conditions are created for directly combining science and production.

The favorable conditions of the capital also have their reverse side, from the standpoint of the urban complex. It is convenient for the ministries and departments to locate large industrial enterprises and scientific research, planning-design and other organizations in Moscow. The very proximity to the ministry makes it possible to manage these enterprises better and to disseminate their experience. It is possible to utilize Moscow enterprises and organizations as a reserve for augmenting the staff of the ministry and also large enterprises of the branch with personnel who have high qualifications. Naturally, the ministries try to expand existing enterprises or construct new ones precisely in Moscow.

Moreover, Moscow has highly developed municipal services. Consequently, the creation of a new enterprise here is less expensive than in medium-sized or small cities. The effect of agglomeration makes it possible for ministries to spend money almost exclusively on production construction. All these factors motivate the ministries to expand their Moscow enterprises and to increase the number of workers and employees. Still, the demographic situation in the capital is fairly complicated. The natural growth of the population is relatively small. There are more and more people who are past working age.

As a result, the demand for workers is increasing rapidly in Moscow, and the possibilities of satisfying it through the capital's own resources are gradually decreasing. This creates unfavorable consequences. In particular,

each year many workers come to Moscow from neighboring oblasts. But the territory of the city is limited, and there is less and less free land for new housing and municipal construction. Additionally, the new residential areas are moving farther and farther from the places of work. The problem of passenger transportation is becoming more critical, and the city's utilities network is being strained. Expenses borne by the national economy for the creation of new jobs in Moscow are gradually increasing. There will inevitably come a time when, from the standpoint of the national economy, it will be more effective to create new jobs outside the city.

Of course, all these complicated problems cannot be solved without the active participation of local planning agencies or making a comprehensive plan.

[Question] The creation of comprehensive plans for the development of cities can be called a relatively new form of planning. The first comprehensive plan for Moscow was developed for 1971-1975. But what was the basis for the comprehensive approach to planning the development of the city?

[Answer] Experience in applying this approach began with the first General Plan for the Reconstruction of Moscow, which was approved in 1935. This was the first long-range plan for the development of a large city in the USSR. A comparison of the last general plan (1971) with the first shows that, with time, we have achieved considerably more coordination of the architectural-layout part of the plan with the technical-economic sections. While in 1935 their link with the city's economy was only noted, in the last plan there is a comprehensive approach to the planning of the city's multibranched economy, and the balance of its individual elements is increasing.

General plans determine only the overall strategy for the development of a city for 25-30 years (with predictions for the more distant future), and they do not contain compulsory assignments for the ministries and departments, nor do they indicate the organizations and enterprises that are responsible for achieving each indicator. Therefore in practice the ministries do not always consider themselves obliged to be guided by them when developing their enterprises. General plans are realized through a system of five-year and annual plans for the comprehensive economic and social development of Moscow.

Methods for developing these plans have also travelled a long path of emergence and development. As early as 1920 at the Moscow district congress of soviets a task was set for drawing up a unified current economic plan. And it was then that local planning agencies were created, whose task included the planning and intercoordinated development of individual branches of Moscow and the Moscow district. It is important to note that local agencies participated in the planning of all Moscow industry. In 1922 the district planning commission was created for these purposes.

The role of Moscow city planning agencies increased especially with the changeover to five-year planning. Even the first five-year plan was developed not only in the branch, but also in the territorial cross section. But the first five-year plan was drawn up not individually for Moscow, but for the entire Moscow district, and therefore the measures necessary for the

development of the capital's municipal economy were not taken into account, and its development lagged behind the needs of the city.

At the June (1931) Plenum of the TsK VKP(b) it was recognized as necessary to draw up an independent five-year plan for Moscow, and also to develop a plan for the reconstruction of Moscow in the long-range future. The second and third plans for the development of the Moscow economy were drawn up on the basis of this.

Each Moscow five-year plan had its own direction. Thus the fifth envisioned the creation of a large industrial base for construction through combining numerous planning and construction organizations into large specialized main boards -- architectural-layout administration (GlavAPU); for housing and civil construction (Glavmosstroy); and for the construction materials and construction parts industry (Glavmospromstroymaterialy). This led to rapid growth of construction capacities. There arose the question of correct utilization of these immense capacities and improvement of the planning of the Moscow economy as a unified whole.

In 1957-1964, as a result of the fact that planning and administrative guidance and also operational control over all industrial enterprises were taken over by the Mosgorsovznarkhoz, there was intra-urban cooperation of Moscow enterprises and dissemination of the advanced experience of the best labor collectives. Still, the problem of comprehensive planning was becoming more and more crucial.

The return to the branch principle of administration and planning (1965) led to a situation where the planning of the Moscow economy was carried out from many centers which were acting in parallel but were poorly coordinated with one another. The urban economy was under the jurisdiction of the ispolkom of the Moscow soviet. But the development and current activity of thousands of enterprises and organizations located in Moscow were planned by the corresponding ministries and departments without the participation of city organizations. Therefore the plans of various ministries and departments were not coordinated either among themselves or with the plans for the construction of residential buildings, medical enterprises, municipal and consumer service enterprises, and so forth.

The need to account more profoundly for the conditions of Moscow made itself known very quickly. Therefore for the Ninth Five-Year Plan (1971-1975) the USSR Gosplan, the RSFSR Gosplan and the Mosgorplan worked out the first comprehensive plan for the city's development. It was approved by a special decree of the CPSU Central Committee and the USSR Council of Ministers.

The development of a unified comprehensive plan was an important step in the improvement of planning. It made it possible to utilize balance methods and, on the basis of this, to adjust the proposals of the ministries and departments. At the same time, it was demonstrated that the development of a comprehensive plan through the efforts of central planning agencies alone does not make it possible to achieve proportional and balanced development of the capital's public economy. First of all, this plan, especially the part

pertaining to industry and science where about half of all the workers are employed, was still based on the proposals of the ministries and departments. The gosplans did not receive any other proposals. The ispolkom of the Moscow soviet and its planning commission made proposals pertaining only to the development of the urban economy. Therefore the branch approach prevailed in the plans, the specific features of the city were not adequately taken into account, and the disproportions were not fully eliminated.

Moreover, the result depends on more than just the development of the plan. Its precise implementation is a more important part of the process of administration. Naturally, this did not turn out to be within the power of special groups of the USSR and RSFSR gosplans.

In September 1975 the USSR Council of Ministers, at the suggestion of Moscow organizations, adopted a special decree, "On Improvement of Planning Comprehensive Development of the Moscow Public Economy." The development of drafts of unified annual and long-range plans for the comprehensive economic and social development of Moscow was made the responsibility of the ispolkom of the Moscow soviet. They are then presented to the USSR Gosplan, the RSFSR Council of Ministers and the RSFSR Gosplan. The USSR Gosplan submits a draft as a separate section of the plan for the economic and social development of the USSR. This draft is considered and approved by the government.

In order to implement these plans successfully, the staff of the Moscow city planning commission and the city statistical administration has been increased somewhat, and they have also created the Institute of Economic Problems of Comprehensive Development of the Moscow Public Economy.

[Question] How is work being carried out on the annual and five-year comprehensive plans?

[Answer] After the Moscow enterprises and organizations submit their proposals to the corresponding ministries and departments, the latter submit them, along with their corrections, to the Moscow gorispolkom (Moscow gorplan). Here these proposals are considered in detail. On the basis of these, the ispolkom of the Moscow soviet develops a unified comprehensive balanced plan for the city. This is not a simple summary of the plans of the ministries and departments, but an independent draft that takes into account the conditions for the development of Moscow and the capabilities of the enterprises and organizations. The plan is approved as a whole with a breakdown for the various ministries and departments. The latter give assignments of the plan to the Moscow enterprises and organizations under their jurisdiction.

The plan encompasses all enterprises and organizations of the city, regardless of their departmental jurisdiction, size and production profile.

In other words, the policy for planning has changed in such a way that the possibilities of accounting for the specific conditions of Moscow in the plan have increased significantly. But the branch principle has been retained -- each enterprise receives its plan from its higher branch organization. At the

same time the role of the territorial approach to drawing up the plan has increased. The sum of plans approved for all ministries and departments envisions fuller utilization of resources existing in Moscow (primarily labor force and the capacities of construction organizations). A special planning staff organizes systematic analysis of the course of fulfillment of the plan.

With the new planning policy, special attention is devoted to balancing the need for labor force with labor resources, volumes of capital investments with the capacities of construction organizations, and indicators of the work of industry, transportation and construction with indicators of the urban economy. In other words, the demands of the city economy for resources are balanced with their availability, and efficient utilization of these resources is also stimulated. This is ensured by the fact that the annual and five-year plans for comprehensive economic and social development of the city are developed by a single planning agency according to a single methodology.

The plan is directive in nature. At all stages planning work is carried out through the joint efforts of branch and territorial (city) planning agencies. Moreover, the Moscow Gorplan has been given the right to enlist workers of ministries and departments in the development of the plan. Methods of comprehensive planning are constantly being improved on the basis of experience and contacts both with ministries and with enterprises.

Thus a large-scale economic experiment which is important for the entire national economy is being conducted in Moscow. It is directed toward searching for ways of combining branch and territorial planning and testing them in practice.

[Question] What are the main disproportions in the development of Moscow, and how does the unified comprehensive plan help to eliminate them?

[Answer] The main disproportion in the development of Moscow is the lack of correspondence between the number of jobs and the available labor resources. At the beginning of the 10th Five-Year Plan 200,000 jobs were unfilled and there was a shortage of labor resources. Because of measures taken in the process of drawing up the comprehensive plan (above all, mechanization and automation of production processes), the shortage was cut in half. Several new sections appeared in the comprehensive plan, above all the section entitled "Reconstruction and Technical Re-Equipment of Industrial Enterprises." For Moscow as well as for other large cities, this is the general direction of the development of industry: it is inexpedient to construct new enterprises here because of the shortage of labor resources, and therefore it is more expedient to re-equip existing enterprises, which are frequently not at a very high technical level.

A good deal was done to solve this problem under the 10th Five-Year Plan. Practically all the industrial enterprises were considered from the standpoint of renovation and re-equipment, and the first objects were singled out. Preference was given to enterprises that produce consumer goods (light, the food and the meat and dairy industry). The majority of light industry enterprises in Moscow are old ones which were constructed before the

revolution or during the first postwar years, and the equipment installed in them is obsolete. Under Moscow's conditions, renovation and re-equipment frequently involve the construction of new production buildings, and therefore the following indicators were reflected in the section entitled "Reconstruction and Technical Re-Equipment":

volumes of capital investments and construction and installation work;

startup of fixed capital and production capacities from these capital investments;

replacement of worn-out and obsolete equipment;

installation of comprehensive lines and new, highly mechanized production equipment;

increased coefficient of shift work of equipment.

The introduction of these indicators made it possible to establish stricter control over the course of reconstruction and technical re-equipment. The volumes of funds allotted to the ministries and departments for these purposes were increased. Unfortunately, not all ministries are participating actively in this work yet.

Along with reconstruction, consideration was given to such questions as moving outside the city certain enterprises that are harmful in terms of sanitation or cause a fire hazard. Some of these enterprises were re-oriented toward producing other products which are more suitable for the Moscow economic complex.

One more problem which we had to solve under the 10th Five-Year Plan was to make the volume of capital investments correspond to the capacities of construction organizations. A good deal was done in this respect. First of all, measures were taken to increase the capacities of construction organizations, and a new main board was created: Glavmosremont, which specializes in the repair of residential buildings, schools, children's institutions, hospitals, polyclinics, and so forth. This is of great significance since specialized construction organizations are relieved of repair work, and this is changed over to an industrial basis. Each rayon of the city now has a repair trust, and on the scale of the city there are specialized enterprises which perform repair jobs on a good technical basis. In addition to this, additional construction capacities were created in a number of other administrations of the Moscow gorispolkom, which made it possible for certain specific construction jobs to be carried out directly through the forces of the main administrations, that is by the direct labor method. Moreover, the construction organizations, ministries and departments began to participate more actively in work on facilities of the urban economy. All of this together led to a situation where, during the years of the 10th Five-Year Plan, the aforementioned disproportions were smoothed out, and the plan for capital investments under the 11th Five-Year Plan was fully balanced with the capacities of construction organizations.

The capacities for producing construction materials also increased under the 10th Five-Year Plan, especially for certain kinds of reinforced concrete items, wall materials, brick, and finishing materials. Measures were taken to concentrate funds on startup objects. As a result, the number of facilities under construction or being started decreased significantly. Measures were taken to reduce the time periods for construction of facilities, and the number of facilities being constructed simultaneously also decreased. During the 10th Five-Year Plan there were approximately 25 percent fewer of these facilities. But reducing the amount of incomplete construction is a lengthy process, and the results will be reflected under the 11th Five-Year Plan.

Under the 11th Five-Year Plan a new method of planning capital construction and design work is being introduced -- planning for 2 years. As early as 1977 the ispolkom of the Moscow soviet adopted a special decree to the effect that all civil construction and design work in the city would be changed over to 2-year plans. This is very important since plans both for the next year and the one following that are considered at the same time, so that it is possible to do preparatory work ahead of time, to complete technical documentation promptly, and to prepare sites and utilities at new construction sites, and to do other work that requires preliminary coordination and planning. We presume that under the 11th Five-Year Plan, 2-year planning will be extended to all kinds of construction, including industrial construction.

Because of the development of the comprehensive plan, proportions have improved between the development of the urban economy and construction and industry, and also in the national economic complex as a whole.

[Question] Apparently the interests of individual ministries (branches) and of the unified economic complex of Moscow (territory) do not always coincide. How does one manage to make them correspond to one another in the process of drawing up the comprehensive plan?

[Answer] Because of the draft of the plan (for the year or the five-year period) received from the ministries and departments, the Moscow city planning commission has at its disposal information about the intentions of these ministries with respect to the development of enterprises and organizations located in the city. This is the initial information for considering the prospects for the development of each enterprise. The Moscow Gorplan develops its own draft plan, which takes into account the interests of the city as a whole. By comparing these two drafts one can tell the degree to which the proposals of the ministries correspond to the tasks of urban development.

This is a very cursory description of the complicated process of coordinating drafts, which in practice requires great expenditures of effort on the part of Moscow Gorplan workers.

First of all let us discuss preplanning work. It includes an analysis of the course of the implementation of the current annual plan. At the same time one analyzes the degree to which its implementation corresponds to the tasks of the general plan (for both the five-year plan and the annual plan are constituent parts of the general plan).

In addition to this analysis, work is done to draw up special-purpose comprehensive programs (TsKP). Under the Tenth Five-Year Plan we developed the TsKP "Industry" for the development and specialization of Moscow industry during 1981-1990. The program will be refined every 5 years. Development has been completed on other TsKP's, for example, the program "Labor" (efficient utilization of labor resources). It considers such indicators as the population of the city, labor resources, and the number of workers in the various branches, ministries and departments, singling out the number of workers employed in the branch "science and scientific service." These indicators are considered in their dynamics from 1981 through 1990. We have begun the creation of a TsKP for the development of the urban economy, and in the future it is intended to include the development of transportation as well. The development of the TsKP is an important task of the Moscow Gorplan and the Institute of Economic Problems of the Comprehensive Development of Moscow.

The third method of preplanning work is drawing up variant calculations with the help of an automated system of planning calculations (ASPR). Under the Tenth Five-Year Plan we completed the creation of the first section of this system, and under the Eleventh Five-Year Plan we plan to introduce the second section. From existing developments we can calculate and select the necessary variants for a number of branches. In our opinion, the subsystem of the consolidated national economic plan is especially important. It considers the main indicators of the future comprehensive plan for the development of Moscow.

When drawing up the plan for the Twelfth Five-Year Plan we will be able to "play out" (simulate) all the main indicators of the comprehensive plan and select the necessary variants. That is, by the time of the development of the draft of the comprehensive plan, we will have a model of it which can be called optimal from the standpoint of the city's comprehensive development.

The draft of the consolidated comprehensive plan drawn up by the Moscow Gorplan is submitted to the USSR Gosplan and the RSFSR Gosplan (for ministries and departments of Union and republic jurisdiction, respectively), where it is given final approval and the interests of the branch and the territory are coordinated. Because of the preliminary development, we manage to substantiate our position better.

[Question] Does the Moscow Gorplan have economic levers which enable it to influence the ministries?

[Answer] I shall give an example. Now there is no effective economic mechanism which motivates the enterprises to increase the production of consumer goods. We are constantly engaging in dispute with the ministries and departments which try to work at slow rates. How can we influence them? This influence is achieved by creating for enterprises that increase the production of these goods certain advantages during reconstruction, providing them with labor resources, transportation services (almost all cargo shipments are under the jurisdiction of the Moscow soviet), and municipal services.

In the comprehensive plan one establishes the overall volume of capital investments for the city and for industrial construction, the startup of fixed capital and production capacities, and also the list of facilities. These indicators of the comprehensive plan make it possible to regulate the volume of construction, and then to control the course of its fulfillment as well. In all cases one stipulates mandatory observance of the conditions for comprehensive construction and comprehensive startup. That is, when any ministry envisions the construction or reconstruction of a production facility, the task of the Moscow Gorplan is to ensure the necessary sequence of inclusion of facilities in the plan and to check to make sure that all the work accompanying the construction is conducted on time and according to a single schedule. The ministries are motivated to cooperate with us since almost all the construction organizations of Moscow are under the jurisdiction of the Moscow soviet. Their capacities are limited, and the orders of the ministries, as a rule, exceed the capacities of the construction organizations 2-3-fold.

Any plan for new construction or reconstruction is coordinated with the ispolkom of the Moscow soviet, since it requires not only the allotment of sections and additional capital investments, but also workers and employees, which are under special control. The same thing can be said about connecting these enterprises and organizations to the city utilities network.

New facilities are now included by name in the plan. Therefore, as a rule, we manage to avoid the construction of new production buildings under the guise of reconstruction. But nonetheless such cases exist. We are trying to prevent them. To do this, in the stage of the plan we thoroughly discuss all details of the reconstruction of enterprises with the involved ministries. Strictly speaking, all these are not economic levers, but they still enable us to influence the ministries effectively.

Unfortunately, in solving certain problems that are crucial for the city we can still apply only purely administrative measures, for example, when removing from the city organizations and enterprises that are not appropriate for it. But still, when capacities are removed we must make up in some way for the products we lose by doing this. Possibly, it is expedient to locate such an enterprise outside the Moscow city limits, but we cannot influence this, and we do not have information about the profitability of such a variant of distribution.

[Question] Apparently, the experience in planning and administration of the Moscow economy can, to one degree or another, be extended to other cities and regions of our country. For the objective conditions for the development and functioning of the capital's economy, which conditioned the creation in Moscow of a system of comprehensive planning, exist to one degree or another in such large cities as Leningrad, Kiev, Novosibirsk, Sverdlovsk and others. Apparently the form of comprehensive planning will be developed in the future as well. In your opinion, in which direction should this improvement proceed?

[Answer] A similar policy already exists in Leningrad. And the experience will be applied in other places as well. The experience in drawing up plans

for the comprehensive development of Moscow and analysis of their implementation have shown that, in order to increase the effectiveness of comprehensive planning, a number of organizational and economic measures are needed.

It is necessary to make the group of planning indicators more precise. I think that, for instance, we should participate more actively in solving problems related to the construction of new enterprises.

It is necessary to improve the normative base for planning and methods for utilizing it. We must utilize more completely the experience in planned management that has been accumulated in the rayon soviets of people's deputies and their ispolkoms and planning commissions.

Planning the development of individual enterprises and production associations depends on a developed system of economic levers. In branch planning such levers are utilized flexibly and extensively enough. But at the same time there are still practically no economic levers that contribute to correct formation and implementation of territorial plans. Moreover, the economic interests of enterprises, individual branches of industry and the national economy, in a number of cases, stand in contradiction to the goals formulated by the comprehensive plan for the economic and social development of the city. The development of a system of economic levers and stimuli that contribute to the implementation of comprehensive plans is of primary significance in improving and developing the planning mechanism.

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## INSTITUTE DIRECTOR OUTLINES PROCEDURES FOR NONTECHNICAL INNOVATIONS

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian  
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[Article by V. L. Makarov, corresponding member of the USSR Academy of Sciences, director of the All-Union Scientific Research Institute of Problems of Organization and Administration of the USSR State Committee for Science and Technology (Moscow): "Introduction of Nontechnical Innovations"]

[Text] Like living beings, innovations are born, go through a number of stages in their development and, finally, die, dissolving into the sea of life, being replaced by other innovations that have come along.

Some innovations die without having been born. These are the majority, but they do not remain in the memory of mankind. Others have a long life in store. It is exceptionally worthwhile to look at an innovation from the standpoint of its life cycle. By doing this one can understand much more clearly the profound factors on which the success or failure of the introduction of an innovation depend.

I have a slight objection to the word "introduction" since it is related to the idea of overcoming resistance. Other terms are suggested: assimilation, penetration, dissemination, utilization. It seems to me that they reflect the essence of the matter less precisely.

### On the Theory of Introduction

And so the process of the introduction of an innovation from beginning to end, that is, its complete life cycle, is the main subject of the theory of introduction. But so far there is no such theory. There are only fragments of it, very disconnected ones, which do not give even an approximate idea of the picture as a whole. Most of the attention of researchers is concentrated on innovations of a technical nature. This is explicable, since their introduction is regarded, at least implicitly, as part of the problems of technical progress. On the other hand, a technical innovation is fairly simply identified, revealed, as it were, in pure form. It is relatively easy to obtain reliable information about it, there are certain statistics, and so forth.

But technical innovations comprise only a small part of the sea of innovations in general, for an innovation is a form of resolution of a contradiction, a manifestation of progress in any sphere of human activity, and not just in technical equipment or technology. The concept of innovation is general in nature. One can single out quite specifically the features inherent in all innovations, both technical and nontechnical.

The following divisions of the theory of introduction can be designated.

1. The appearance of innovations. Social conditions and administrative levels that promote or impede the appearance of innovations in one sphere or another, for solving one problem or another. The conditions for appearance (necessary and adequate).
2. Classification of innovations. A sufficiently complete and detailed classification is based on several measurements or classification indicators. For example, in terms of the indicator of the content or internal nature, one can single out innovations that are technical, economic, organizational, and so forth. It is fruitful to consider such indicators as the scale (volume) of innovations (global, local, and so forth), complexity (comprehensiveness), and parameters of the life cycle.
3. The life cycle of the innovation or the process of introduction of the innovation as such. This includes primarily the separation and analysis of all stages and substages of the process of introduction. It is necessary to have a clear definition of the stages, their identification and measurement, and successful introduction of quantitative characteristics. The key division: mechanisms for changing from stage to stage.
4. The central division of the theory includes the patterns of the process of introduction of innovations. It is necessary to find conditions for successful introduction so that the innovation will pass with natural speed through all stages of this process. Now, apparently, it is possible only to guess about the essence and form of these patterns. It is not impossible that in the most general form innovations can be regarded as the result of a combination of natural and artificial selection. Indeed, an innovation that appears as a result of a largely random process acquires the right to existence and development only if it falls onto fertile soil.
5. Control and stimulation of introduction (on the basis of recognition of the patterns).

The theory of introduction is a large and complicated issue which requires independent consideration. It is not considered in detail in this article. The goal of the article is different: to illustrate the common nature of problems of introduction of technical and nontechnical innovations which arise mainly in the area of the economics and organization of the national economy. We shall discuss innovations proposed by economic science, and also certain arguments in favor of the idea that the process of introduction of these innovations requires a powerful, well organized system.

## Stages of the Process of Introduction

It is necessary to recognize clearly the fact that innovations proposed by social sciences pass through a number of stages. Following the movement of an innovation from stage to stage can be an effective instrument for controlling the process of introduction.

In the first column of the table are the consolidated stages of the process of introduction; the second gives an illustration of the stages using the concrete example of the creation and introduction into practice of the subsystem "Long-Range Planning" in the OASU of the USSR Ministry of Instrument Making, Automation Equipment, and Control Systems (this work recently received a prize from the USSR Council of Ministers); and the third column names the performers of the work.

The stages of the process of introduction can be conveniently presented in the form of individual "productions," whose input are "products" of preceding stages and whose output are the actual products of the given stage. The success of introduction is determined to a significant degree by the degree to which the products pass through the stages unimpeded. And this depends primarily on the coordination of the lists of input and output products when moving from stage to stage and, finally, on the motivation of the organizations that are carrying out the corresponding stages.

A typical example of a lack of correspondence of the products lists is provided by one of the jobs performed by the council for contributing to the socio-economic development of Novosibirsk Oblast under the party obkom. It published a list of developments of scientific institutions which were ready for introduction at enterprises of the oblast. And the enterprises, in turn, formulated the demand for the utilization of scientific achievements. The intersection of the two lists turned out to be quite insignificant, and this shows that the supply and demand were formulated in quite different ways. Only after further developments and contacts was it possible to coordinate the lists in terms of many points. For example, several institutes of the Siberian Branch of the USSR Academy of Sciences suggested methods of obtaining and utilizing metal powders. Correspondingly, the Novosibirsk plants presented their orders in this area (processing wastes of industrial steels into new instruments, pressing important parts from powders, obtaining wear-resistant coatings, and so forth). In the initial formulations one could not even find any common ground. Now a unified program for powder metallurgy has been developed and coordinated, and everything is in its place. But this required considerable efforts, the work of joint groups, and so forth.

If for some reason the product of the preceding stage cannot be accepted by the next one, the process of introduction is halted. Thus suggestions for improving planning with the help of economic-mathematical methods and models, as a rule, are formulated imperfectly, in a language which is foreign to planning workers. Planning workers have become accustomed to dealing with standard forms of documents and methods of completing and approving them which have developed throughout the years. And suddenly it is suggested that they gather and process completely new information, that they analyze the odd-

looking output from electronic computers. This looks like a semimanufactured product to economic science. Its transformation into a high-quality product which can be utilized in practice passes through the stage of improvement of planning technology. And nobody deals especially with this.

Successful introduction is carried out most frequently when almost all stages of this process are realized by a single collective. For example, the sociology division, headed by Academician T. I. Zaslavskaya (Institute of Economics and Organization of Industrial Production of the Siberian Branch of the USSR Academy of Sciences), conducted a number of research projects and gave recommendations for reducing labor turnover for the city of Rubtsovsk in Altay Kray and the rural rayons of Novosibirsk Oblast. Rubtsovsk became the permanent base city for the sociologists, and their ties with the city administration have become regular and have lasted for several five-year plans now. Receiving recommendations directly from the hands of the scientists, workers of party, state and management agencies are glad to utilize them. The results are at hand -- labor turnover is decreasing.

Let us illustrate the concept of the products of the stages of an organizational-economic innovation with the example of this measure: it was suggested that the indicators for evaluating the activity of economic organizations be changed. Here we are proceeding from the assumption that the evaluation of the activity of economic organizations should be made according to a single indicator, say, the fulfillment of delivery agreements. This example, incidentally, shows that innovations of this type are essentially comprehensive and interdepartmental in nature.

The first stage. Theoretical substantiation of the proposal, scientific research work, and comprehensive development of principles for changing over to a single indicator through the efforts of economists, lawyers, and administrative specialists. Basically, this is apparently a task for academic scientific research institutes. The output product is the "technical" assignment for "planning" (methodological and technological development), formulated according to a standard, which, incidentally, must also be developed and approved for economic and organizational innovations. This is a labor-intensive stage and the time expenditures amount to 1-2 years.

The second stage. The development of methods, provisions and technological systems in which one formulates in the same way what the system of agreements and their content are. It is also necessary to indicate how to determine the degree of fulfillment of agreements, how to form all kinds of organizational funds, the system of incentives, and so forth. The output product is the totality of methods and provisions which are subject to subsequent approval. The organizations performing work in this stage are: the scientific research institutes of the departments (Gossnab, Gosplan, State Committee for Labor and Wages, Ministry of Finance, State Committee for Prices, Ministry of Justice, and others). The approximate amount of time needed is 1-2 years.

The third stage. Setting up the economic experiment. It is planned to conduct the experiment with a representative group of economic organizations. It is given the appropriate legal status. So far, our theory and formulation

of economic, administrative and organizational experimentation are in the embryonic stage. Practice is ahead of theory here. The output product is a document like the report on the results of an experiment, which includes the methods for conducting it, a description, the main results, an evaluation, conclusions, and suggestions. The summary report is formulated according to certain standards, which also must be developed.

The organizations responsible for conducting the experiment are primarily those enterprises at which it was conducted, and also organizations which carried out the preceding stage. The time expenditures are about 2-3 years.

The fourth stage. The development of a program for introducing the new system for evaluating the work into the national economy. The program includes a description of the procedures and policy for introduction, with an indication of the specific time periods, responsible parties, and, especially important, the content and concrete values of those parameters from which it is possible to judge the fulfillment of the corresponding divisions, and indications of the parties and organizations responsible for control over the process of introduction. The issue of simplicity of control is a principal one. So far, it is difficult to say who should realize this stage. In any case it should be at a superdepartmental level. Time expenditures amount to about a half year.

The fifth stage. The publication of a decree and the approval of all the necessary methods and the program for introduction. It is extremely important for the publication of the decree to be one of the points of the program; the new policy for evaluating the work of economic organizations has been introduced with a certain lag, that is, it has been preceded by significant preparatory work. The output products of this stage are the decree and the approved methods, normative documents and standards, which have been submitted to all organizations in the most complete and detailed form. The last is of principal importance. It is not enough to produce the methods; it is necessary to organize the preparation for their utilization, to work to achieve the same understanding of them in the local areas, and to inform each worker of them. From the experience in preparing previous documents of a similar level, time expenditures can be estimated at 1-2 years.

The sixth stage. Implementation of the approved program for introduction. Strict control over the implementation of its stages. The output product of this final stage is also the final result of the process of introduction. Complete implementation of the program means final introduction. The scope (or volume) of introduction is the most significant indicator of the degree of introduction which, in principle, can be checked fairly easily.

The separation of the process of introduction into stages entails a number of essential consequences.

It is necessary to coordinate the input and output products (recommendations, decisions, reports, procedures, and so forth). This is especially important for social sciences because of the lack of standards for determining what the product of a stage is.

Organizations which represent stages differ essentially in terms of the nature of their activity. The transfer of an innovation from department to department raises the problem of coordinating supply and demand and motivating all participants in the process of introduction. The national economic motivation, which has determined the very essence of the innovation, should have a real influence on the behavior of all participants in the process of introduction.

Work should be evaluated in the same way in any stage, that is, it is necessary to arrange the system of incentives properly. A violation of this rule will lead to certain collisions. Frequently an innovation is associated with the name of the initial author or the collective that has worked in the first stage. Hence the desire to be among the co-authors, the well-known ordeals of inventors, and so forth. When the inequality of the stages has been overcome in the realization of innovations, such phenomena appear much less frequently. For example, in the situation of "architect -- builder" the rights and responsibilities as well as the degree of authorship are clearly delimited. The same can be said about the production of movies: the set designer, the director and the actor -- all usually receive laurels according to their merits.

Since all stages are equally important, the responsibility of the collectives and organizations participating in various stages should also be the same. This leads to the following conclusion. Academic science, including social sciences, should bear responsibility for the quality of their product, particularly suggestions for improving planning and administration. The introduction of such responsibility will reduce the flow of poorly thought-out, crude proposals, and will make it possible to concentrate on the main things.

Because of the natural division of labor and the requirement of essentially different qualities in various stages, there appear professionals and specialists in precisely one stage. Thus one can naturally separate the organizational work involved in the introduction of innovations. There is some point in thinking about creating autonomously financed organizations which render services of an organizational nature, which has been discussed repeatedly in the press.

#### On Experiments

There is now the question of special scientific development for conducting an experiment related to the introduction of nontechnical innovations. We are well aware of such experiments as rationing products that are in short supply in a number of regions of the country, the Orel "uninterrupted work" in construction, the Ipatovo method in agriculture, the Zlobin brigade contract, the Shchokino experiment, and many others. Nobody is dealing with these problems comprehensively or at all systematically. The legal status of the experiment requires careful scientific development. Another important issue is accounting for the so-called effect from the right-side movement: one cannot move only partially into traffic on the right-hand side of the street. Apparently it is necessary to give a special, experimental status to certain

enterprises, departments, oblasts, and so forth. This will relieve us of the need to be "torn apart" under the pressure of the two systems of indicators -- the old ones and the new ones -- and will remove us from the incomprehensible situation after the experiment has ended, especially if it has produced negative results.

All experiments must be under constant supervision, and the results should be constantly analyzed. Nor can one forget about the analysis of economic experiments of other socialist countries.

At the present time, under the aegis of the All-Union Council of Scientific and Technical Societies and the USSR State Committee for Science and Technology, through the efforts of workers of the Estonian Academy of Sciences and the VNIISI, we have prepared a draft of provisions concerning the economic experiment. This is the first concrete step in the necessary direction.

#### Programs

In the area of technical innovations special-purpose comprehensive programs have become an effective instrument for planning and control of the process of introduction. The USSR State Committee for Science and Technology has developed a clear structure and form for them. A certain amount of experience has been accumulated in the implementation of programs for the introduction of technical innovations. Thus, for example, automated coal mining complexes and systems of machines are being operated successfully. A comprehensive system of measures for discovering and fighting large forest fires has begun to operate. It has already proved its effectiveness.

There can be absolutely no doubt that the special-purpose program method should become the same kind of instrument for planning and control of the process of the introduction of nontechnical innovations as it has become for technical ones. This pertains especially to the introduction of innovations on the scale of the national economy. The USSR State Committee for Science and Technology is supervising the problem of the development and introduction of technical innovations. But who should bear responsibility for programs for introducing social and other nontechnical innovations?

In this connection, apparently, the program for the development of methods and technology for the process of introducing nontechnical innovations could be of interest. In the process of development one would clarify which stages and substages have not been supported organizationally, which stages have no developer, and so forth. It would also be important to estimate the forces and qualifications necessary for carrying out a continuous, uninterrupted process of introduction.

As an experiment, one could also develop a program, for example, for one of the following areas:

collective forms of organization and payment for labor;

rationing in the sphere of consumption;

Table. Consolidated Stages of the Process of Introduction of the Subsystem "Long-Range Planning" into the OASU of the USSR Minpribor

Stages of process of introduction of innovations	Development of subsystem	Executing enterprise
Fundamental research, appearance, creation of innovation	Theory of optimal planning, linear programming	Academic NII's, individuals
Scientific research developments	Study and formalization of existing system of planning in USSR Minpribor, algorithms of optimization and imitation calculations. Main scheme of subsystem	Institute of mathematics (IM) of SO AN SSSR, planning-economics administration of USSR Minpribor VNIPPI OASU USSR Minpribor
Experimental design, planning, methodological developments	Methods, system of computer programs, input and output forms of documents. System of obtaining and updating information	IM SO AN SSSR, NIISystem (Novosibirsk), Giproprivor (Leningrad), VNIPPI OASU, PEU, Main Computer Center of ministry
Testing, experimental models, full-scale experiments, etc.	Experimental calculations	IM SO AN SSSR, NIISystem
Assimilation of innovations under production conditions, single models, small series, economic experiment	Experimental calculations in ministry for 11th Five-Year Plan. Release of subsystem experimental industrial operation at branch GVTs	VNIPPI OASU, GVTs, Giproprivor, PEU
Industrial operation, dissemination in branch, at related enterprises, etc.	Industrial operation of subsystem	GVTs, PEU, VNIPPI OASU
Dissemination in other branches and spheres	Adaptation of methods and software to other branches	IM SO AN SSSR, Minpribor, interested ministries

fulfillment of agreements -- the main indicator of the work of economic organizations.

In the first place, the experience that has been accumulated will help to estimate the volume of work for forming similar programs; second, it will provide material for the development of specific forms of programs that are convenient for control; and, third, it will actually join into a single chain the academic, departmental, administrative and production links.

The program is a rigid organizational form with specific deadlines, responsible workers, and clearly formalized results and control. But scientific work includes much that is indefinite and, by its nature, frequently requires a more flexible and freer organizational structure. Therefore, when organizing scientific work, one would like to utilize the advantages of program organization, but retain significant freedom and flexibility. This is provided by the form called the all-around plan. For example, the sector in the academic scientific research institute which handles problems of improvement of payment for labor coordinates the plans with the corresponding subdivision of the Institute of Labor, and the latter, in turn, coordinates its activity with the division for social problems of the USSR State Committee for Labor and Wages; this can subsequently reach the enterprise and branch. The chain of stages through which an introduced innovation passes is reinforced and becomes permanent here. This recalls the long-term ties among enterprises. Any innovation suggested by scientists in the matter of improving wages will pass through the chain of stages which is already tested and adjusted. In principle, probably, it will be necessary to strive to make sure that each academic subdivision is the foundation of a sufficiently strong chain of organizations that correspond to the stages of introduction.

The Siberian Branch of the USSR Academy of Sciences has experience in developing and approving such programs concerning research in physics-mathematics, technology and chemistry. The coordinated plan is approved by a joint decree of the SO AN SSSR and the ministry or production association.

In conclusion -- about organizational forms of introduction activity. This activity is specific. It is becoming increasingly isolated. Special introduction organizations and professional specialists are appearing in this area -- an inevitable process. The area of technical innovations has many of its own problems; this is a special subject. But at least organizationally, it is clear that everything is finally concentrated in the USSR State Committee for Science and Technology. Because of the unity of introduction activity, attention should apparently be given to the proposal for essential expansion of the functions of the State Committee for Science and Technology to include organizing the introduction of nontechnical innovations. <sup>12373</sup>

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## YOUNG TECHNICIAN, FUTURE ENGINEER

[Introduction to articles that follow]

[Text] The creation of the Siberian Branch of the USSR Academy of Sciences was a large state experiment. Indeed, much here in the Novosibirsk Akademgorodok has been initiated for the first time.

In 1964, on the initiative of the first chairman of the SO AN SSSR [Siberian Branch of the USSR Academy of Sciences], M. A. Lavrent'yev, the KYuT -- The Young Technicians Club -- was founded. In his book "...Siberia Will Grow," Mikhail Alekseyevich wrote: "For children with 'skillful hands,' with an inclination for invention, we have created the KYuT, for which, by fair means or foul, we have managed to construct a separate building. The KYuT was helped a great deal by corresponding member A. A. Lyapunov, engineer-architect A. S. Ladinskiy (we have even been given the nickname of the 'three uncles' of the KYuT), and workers of various institutes.

"We are trying to develop in the boys and girls the main qualities of a scientist and research engineer -- the ability to observe, to pose problems and to think constantly."

Let us add: the KYuT develops in the boys and girls a respect for labor and a desire to work.

Many years have passed. The young technicians club is living, developing and maturing, traditionally receiving attention and support from the Siberian Branch. The club has good, businesslike relations with the collectives of a number of scientific institutes of the SO AN SSSR and organizations of Sovetskiy Rayon in Novosibirsk. Among them are the Computer Center, the Institute of Theoretical and Applied Mechanics, the Institute of Automation, and the rayon division of internal affairs. But especially appreciable for the KYuT is the support of the oldest scientific research institute of Akademgorodok -- the Institute of Hydrodynamics imeni M. A. Lavrent'yev.

What characterizes the club's work today? What are its main directions?

The KYuT is a form of early enlistment of children in labor, of occupational orientation. Studies in the KYuT contribute to the development of their

technical capabilities by exposing them to design work. The club is also very important for the general development of children. "Human development," said Comrade Yu. V. Andropov at the June (1983) Plenum of the CPSU Central Committee, "begins with the first years of life. A good means of education is to combine training with productive labor. It is necessary to firmly follow a course toward instilling in school children skills and a love for useful labor. This can be physical or mental labor, but it must be real labor -- which is productive and necessary to the society." These words can be applied fully to the activity of the young technicians club.

An undoubted advantage of the club is its carefully selected collective. Talented and energetic people are gathered together in the KYuT. When meeting them one is struck first by their devotion to their cause. They have come to the KYuT by various paths -- from plants, schools, scientific research institutes and design bureaus. They have foregone higher wages and free time. It is necessary to work a great deal, and the work is not simple: at machine tools, with complicated instruments -- children... But here is what is surprising: no shouting or noise can be heard here, and there is no nervousness. The situation is peaceful and businesslike -- and creative.

Almost 20 years have passed since the organization of the KYuT. The remarkable experiment is continuing. By publishing these materials the EKO editorial staff hopes to draw attention to the activity of the KYuT. In our opinion, its multifaceted work should be generalized and disseminated. A system of units similar to the KYuT of the SO AN SSSR should occupy a position on the country's scientific and technical structure.

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## GOALS, FUNCTIONS OF YOUNG TECHNICIANS CLUB DESCRIBED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian  
No 10, Oct 83 pp 95-98

[Interview with V. M. Titov, corresponding member of the USSR Academy of Sciences, deputy director of the Institute of Hydrodynamics imeni M. A. Lavrent'yev, member of the council on problems of formation of the Siberian Branch of the Academy of Sciences: "Occupying One's Pedestal"]

[Text] [Question] Vladimir Mikhaylovich, we know that you, a student of M. A. Lavrent'yev, are always interested in the state of affairs in the young technicians club of the SO AN SSSR [Siberian Branch of the USSR Academy of Sciences] and maintain contacts with it. What, in your opinion, is especially important in the club's activity?

[Answer] Before answering that question I would like to discuss what Mikhail Alekseyevich himself thought of the creation of the KYuT.

During the last years of his life, when he was working on his memoires Lavrent'yev repeatedly had to answer questions of journalists about what he considered to be the most important thing he had done in his life. Among other things, (incidentally, this list was not long) he consistently included the young technicians club and the physics-mathematics school at the Novosibirsk State University, which now bears his name, placing them on a level with the creation of Akademgorodok. When he was told that the scope of these was not comparable, he answered: Academgorodok is a new form for the Academy of Sciences, and in the technical areas where we had to take the lead rapidly, similar forms were already being applied and producing good results. And he considered the KYuT and the FMSh to be nonstandard, principally new formations that went beyond the accepted framework, and this is why he assigned them such a high position.

At first, I too was struck by this estimation of the KYuT. But then I came to understand the importance of primarily the social aspects of the club. In what do they consist?

Here the boys and girls acquire the habits of collective labor. As a rule, they are inadequate in school graduates. School training is basically individual, although it is oriented toward some "average" student. In school, as a rule, there is no collective that is based on common labor. Most frequently the classes include people who are working next to one another, but not together. And such forms of collective labor as summer work camps are either not widespread enough or they are intended primarily for the "difficult" adolescent. We sometimes think that is primarily the "poorly adjusted" adolescent who requires attention. And if the pupil or student is working well and is not causing a discipline problem, less attention may be devoted to him.

Of course, this should not be the case. Attention should be given not only for correction, but also for support and development. Would "youth" problems disappear tomorrow if all the "difficult" ones were suddenly to change their ways? No. And tomorrow we adults will rely primarily on those who have the greatest knowledge, the greatest occupational experience, and who are the most stable.

So, in my opinion, the high social mission of the KYuT consists in that work is done there with a large number of boys and girls, regardless of how they study and behave themselves in school, and they are systematically accustomed to collective labor. There are sufficiently large jobs for adolescents -- the design and creation of various motor vehicles and other kinds of technical equipment, a series of regular astronomical observations (right down to expeditions), and the creation of relatively small electronic circuits. In any case the children work together, constantly consulting with one another. That is, they work as the majority of adults do.

The KYuT contributes to accumulating life experience. It expands the sphere in which one finds oneself. Our children, as a rule, study in one collective from the first through the tenth grade. This might be all right, but this in itself limits the framework in which they acquire social experience. Perhaps this is one for reasons for a certain immaturity of our youth.

[Question] And in class, as a rule, the "social roles" are assigned fairly quickly and in the majority of cases they do not change until the tenth grade: the person who learns well is a brain and a leader, and has the respect of the teachers. And there are those who always receive C's and are unnoticed in class ...

[Answer] But still C students can be leaders in some areas. The secondary school program cannot reflect the entire diversity of human activity...

Our KYuT is located in Akademgorodok. Let us take a "successful" case: school, university, with good achievement -- graduate school, and then work. And all this is here in Akademgorodok. Smooth? But the experience of new life communications, new views and values are deliberately acquired late in this case, or are not be acquired at all. This is a significant problem if we wish to rear a strong younger generation. We must "lead" children out of such "closed" systems. And the KYuT is one of the forms that enable this.

There can also be other forms of enlisting adolescents in labor, and in socially useful labor. But it seems to me that in our country there is no well-arranged system or diversity of forms. Moreover, all this is a game of chance. As a result, we do not give the children enough opportunities to find themselves. Not knowing what they are capable of, they frequently make mistakes in selecting occupations, striving for a VUZ which is "prestigious" today, or at least hoping to acquire a secondary education, of whatever kind. If a young person succeeds in school here, he has only one path -- to the VUZ. If he does not enter, he feels deprived, and if he enters he frequently becomes a failure and is dissatisfied with the occupation he has acquired.

The KYuT is additional "insurance," which helps each person to become himself, to find his own support point, to occupy his own pedestal, and to excel in that area which suits him, and not in one which is considered "prestigious" at the given moment. For acquiring pure knowledge is not the only way to prove oneself. Success in life is multifaceted...

[Question] And through which channels, in your opinion, should the mutual influence of the academic institutes of the Siberian Branch and the young technicians club proceed?

[Answer] In the first place, the KYuT could render assistance in manufacturing the simplest circuits and instruments. It is not that our engineers cannot do this. They do this excellently. The fact is that the children can do this, and we should be thinking about their education. We have a certain amount of experience in this kind of collaboration. It is mainly our fault that it has not become systematic, and not the fault of the KYuT. I think that the council of young scientists could also render assistance.

In the second place, our institute, and also other institutes of the Siberian Branch, are experiencing a critical need for skilled laboratory workers. They are now literally "worth their weight in gold." We should rely more firmly on the KYuT to train these highly skilled universal workers, without whom science is unthinkable.

Briefly, it is necessary to transform the ties with the young technicians club into a system. I think that this is primarily the duty of our institute.

[Question] Vladimir Mikhaylovich, sometimes one hears from people of the older generation such considerations as this, for example: we are painfully burdened with our children. Nobody fussed over us like this, and we still grew up and found our path in life... What is your attitude toward such statements?

[Answer] I completely disagree with them. For we were additionally educated and tempered by an extreme situation: the war and the difficult postwar years. Our children are growing up under different conditions (and this is excellent), and they do not know those difficulties which we experienced.

And we should understand this. By protecting our children from real life problems, do we not create for them a consumerist attitude toward life, false ideals, and infantilism?

Therefore it seems to me that we should look very attentively at those forms of education and inculcation of labor habits which correspond to today's level of development of our society. The KYuT, in my opinion, is one of these forms. It is inexpedient to scrimp on funds for institutions like the KYuT. It is unusually important to expand their network and strengthen their material base, primarily -- for tomorrow.

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## YOUNG TECHNICIANS CLUB DIRECTOR URGES SUPPORT OF PROGRAM

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian  
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[Article by V. Yu. Sholokhov, director of the Young Technicians Club of the Siberian Branch of the USSR Academy of Sciences: "Children's Technical Creativity -- A State Matter"]

[Text] Early involvement of youth in scientific and technical creativity leads to more complete realization of their creative potential and to early occupational orientation. We are aware of quite a few clear examples from this area. We shall give only a couple.

Baeyer, who worked with organic synthesis, made his first discovery at age 12; Calvin at age 15 published in the "Works of the Cambridge Mathematical Society" the article entitled "On Heat Distribution"; at age 14 Maxwell wrote an article on oval curves; and at 15 Einstein wrote "Toward an Investigation of the Condition of Air in a Magnetic Field."

And here are some more recent examples. Yu. Kondratyuk at age 15 studied many areas of higher mathematics and at 16 (not knowing about K. E. Tsiolkovskiy), he arrived at the idea of jet flight; at age 14 the future academician N. N. Bogolyubov participated in the mathematics seminar of Academician N. I. Krylov; at age 15 a student at the Leningrad Vocational and Technical School, V. Petrovskiy, designed a turning bridge; and today a tenth-grade student from Kiev, V. Avrutis, has designed a space drill.

One might object that scientific creativity at an early age is possible only for the exceptionally gifted, that one cannot draw conclusions from them. But something else is also apparent: not everywhere and not always are conditions created for manifesting creative capabilities. When these conditions exist, the number of those capable of or, rather, predisposed to serious creativity increases. One need not look far, as they say, for an example. Here is one of the forms of early training of design specialists.

In 1967 in the Siberian Branch of the USSR Academy of sciences, an experiment was begun on the organization of technical classes in the school. It has continued for 10 years. The experiment has been conducted on the basis of the physics and mathematics school and the KYuT of the SO AN SSSR. In the oblast technical exhibits we selected young people with an inclination for design. The selection was based on the ability to solve technical problems. These young people formed the technical class of the FNSh. These were incredible natural talents! They defended 250 technical designs, many of which corresponded to good course designs, although, of course, there were mistakes in them caused by their still inadequate theoretical training. True, many of these young people who were talented in the area of technical equipment, did not succeed in some other subjects, and they even tried to expel some of them from the school. But, fortunately, Mikhail Alekseyevich Lavrent'yev defended them. He liked to say that learning integration will not make a ballerina dance any better. Maybe there is some exaggeration in this comparison, but there is also a grain of truth...

It was suggested that the experiment be continued after creating an engineering department at NGU.

Why did this idea arise? It is no secret that a designer who has completed a technical VUZ is not always capable of working directly with scientific ideas. It takes 2-3 years of retraining in a scientific research institute or design bureau in order for the scientist and the designer to understand one another. The engineering department was intended to solve the problem of combining design work and science. Its graduates could take a "hot" idea from the hands of the scientists and transform it into a reality. But, quite unfortunately, such a department was not created. As a result, almost all of the graduates of the technical classes entered not NGU, but technical VUZes of the country, and it was decided to halt the experiment. I would like to believe that they will return to it.

#### Some Considerations About Organizational Problems

The organizational aspect of children's technical creativity is of no small importance. And the main shortcoming here is the dispersion of forces. This happens, in our opinion, because of the lack of a unified strategy, of a unified understanding of the problems of education on the part of the Ministry of Education and the trade unions.

In addition to oblast young technician stations which are visited by republic ministries of education, in the country there are KYuT's under trade union jurisdiction (which include our KYuT), stations of young technicians of the Ministry of Railways, circles in the Houses of Pioneers, under the jurisdiction of the Komsomol Central Committee, and, finally, sections of technical kinds of sports (model airplanes, model ships, and so forth) in the system of the USSR DOSAAF. But they have almost no connections among themselves. For some reason, the Ministry of Education is not very attentive to trade union clubs. We receive neither methodological assistance, since the oblast young technician stations are weak, nor even provisions concerning mass measures for children.

In our opinion, it would be expedient to transfer the leadership of all children's technical creativity to the USSR State Committee for Science and Technology, after creating a coordination center for it. It is precisely this state committee which can correctly determine the direction in which children's technical creativity should develop.

A great effect would be produced by combining the efforts of school and nonschool children's institutions. Unfortunately, the schools have almost no contacts with us yet. Teachers of physics and labor are perhaps exceptions, even though many interesting things could be done with young designers by biologists and geographers, historians and literary scholars, mathematicians and physical education teachers. Obviously, it is necessary to revise the position of the schools. Joint creative polytechnical work in specific subjects by nonschool institutions and the school could produce valuable results in the training and education of adolescents.

One of the organizational forms that make it possible to combine training and productive labor is training-production combines. I think that occupational orientation and occupational selection should be conducted in the schools, beginning in the fourth and fifth grades. Moreover, this should be done by specialists who have mastered modern scientific methods. Only then will the work produce an effect. Beginning with ages 13-14 it is possible to form specialized classes. We have experience in this both in the FMSh and the KYuT. The creation of training-production combines will help to solve the problem of certain specialties which are especially short of people, which are needed in the given territory (city, rayon).

Of course, the creation of a UPK [training-production combine] should be carefully thought out. It is necessary to have organized productive labor of adolescents and to create conditions for a creative attitude toward labor. It is impossible to instil a love of work if it is uninteresting or, worse, unpleasant.

We see sources of the formation of creative initiative in school children in mass measures with adolescents such as competitions of visionaries and the defense of technical and visionary designs by young authors. For example, interesting work is being conducted by the KYuT of the Novosibirsk Sibelektrotyazhmash plant -- mass radio competitions at the place of residence and large competitions of motorists. The KYuT of the Plant imeni V. P. Chkalov enlists hundreds of young school children in active creative work with the simplest, but real, independently designed models, and it holds mass meetings with school children of the rayon.

The mass measures of young technicians from the KYut of the Elektrosignal plant are popular. They are devoted to the celebration of occupations, in which the school children "defend" one occupation or another, displaying a profound knowledge of the peculiarities of the work. The community of the enterprises participates in this good work, which can be called creativity in occupational orientation. Such cooperation is a source of creative personnel for production. It should become the norm.

Responsible? -- Yes! Prestigious? -- No!

The problem-oriented nature of the technical creativity of children, like problem-oriented study, is an important way of forming the thinking of the young person.

The most active young designers are extremely curious. In the club we have held competitions of inquisitive individuals, where they have suggested the most unexpected questions, designs and phenomena, and, as a rule, they have generated flows of ideas and inventions.

And here we have come to another problem in the organization of technical creativity: what should the leader of a technical circle be like, the person who is assigned the leading role in the education, development and practical training of school children, and how is he different from a teacher who is giving a lesson?

The circle of school children select the leader for themselves and they work with him as long as this communication is satisfying and gratifying. The leader is the only person who bears full responsibility for the actions of the entire collective of the circle, forms it, and organizes the creative activity of the children. In addition to the technology of the development and manufacture of technical devices, he is responsible for all the "technology" of education. Additionally, as distinct from the school teacher, he is bound by strict requirements of the program. A good leader has great authority in the eyes of the school children, and therefore he has great possibilities of imparting more profoundly his personal convictions, his point of view and his influence to the formation of stable interests in students, to their life plans and their selection of an occupation. What has been said can be confirmed by the result of a questionnaire of school children, from which it became clear that the most important incentive that attracts 70 percent of the children to the circle is the personality of the leader and interest in communicating with him.

Unfortunately, work with children is not taken seriously enough, it does not have enough prestige, and there are not always incentives for it (for example, engineering and technical workers are permitted to work with children with hourly payment for only 240 hours a year). The payment for staff leaders of technical circles of nonschool institutions is very low (from 80 to 110 rubles per month).

Such unjustifiably low pay stands in contradiction to the high requirements placed on the circle leader. He must master the fundamentals of pedagogy, know engineering disciplines, be able to pose a problem independently and earmark ways of solving it, have practical abilities and skills of performing all technological operations in the laboratory, know and strictly fulfill all the requirements of technical safety and industrial sanitation, which is especially important when working with children, and engage in self-education and analysis of his own activity and the activity of the collective of the circle. This is far from a complete list of the qualities and skills, but it is enough to see the contradiction that exists.

It would be expedient to attract skill specialists to be leaders of the technical creativity of school children, people who are aware of the crucial problems of science, technology and production, and are able to solve technical problems using modern methods. It would be most efficient for them to participate with the rights of people who hold two or more jobs. The holding of two or more jobs should be regulated by a special decision and should envision the opportunity for leaders of circles of technical creativity (in radio electronics, computer equipment, astrophysics, and so forth) to work with a load of up to 50-60 hours per month throughout the school year. Some of the functions of the leader should be assigned to students in senior classes of VUZes.

#### How to Introduce the School Child to Scientific and Technical Work

How can school children "unceremoniously" solve fairly complicated problems? By chance, a fortunate confluence of circumstances? No, it takes painstaking work on the part of a large collective of adults who understand how important it is to find forms of introducing school children to scientific and technical activity.

Perhaps the first and most important thing is that in the young technicians clubs the school children have the opportunity to communicate directly with scientists, engineers and designers and to work under their guidance, to receive the problem directly from the hands of the scientist, and to experience the importance and necessity of their activity. Thus specialists in the selection of grain crops from the All-Union Academy of Agricultural Sciences imeni V. I. Lenin told the children about the technical problems in selection work and about the need to automate research processes. As a result, the KYuT members created an instrument which accelerates the process of analyzing grain 10-fold. The matter proceeded further. The school children undertook to create an automated line, which would make it possible to conduct the investigation, including threshing the spike, weighing, calculating the number of kernels, evaluating the protein content, and, finally sorting for trial planting. And all this with automatic recording of the results. Individual components of the automated line were made, but the excessively large amount of work impeded actual manufacture of the instrument. Some of the developments were transferred in the form of blueprints and sketches to the shops.

Another example is Volodya Zdorovilov's perforator for oil well pipes. There are, no doubt, perforators developed by "adults" of scientific research institutes and design bureaus, but here it is important that the school boy became a participant in the solution to crucial, "burning" problems.

But what about fundamental knowledge? Is it possible to deal with serious problems without a sufficiently profound understanding of the phenomena themselves? Indeed, without knowledge the quality of design work and the children's interest in it can decline. It is necessary to search for forms of extensive cooperation and communication between school children and scientists, inventors, engineers and efficiency experts.

Perhaps it is not always necessary to go to the leading scientists. Their time must be valued. But still the communication can be not only direct, but also indirect: the scientist directs a graduate student, the graduate student directs a student, and the student directs a school child. By including an engineer in this chain, one can clearly present the system of organization of nonschool work with adolescents, the system of supervised self-education.

A relatively new form of combining science and production is the scientific production association, in which qualitatively new collectives are formed. These include workers, engineers and scientists. They are capable of solving serious scientific and technical problems. Their structure can also include student design bureaus and bureaus formed from adolescents who have demonstrated technical creativity in technical circles. Such cooperation of school children and students, workers, engineers and scientists leads to direct training of youth in specialties, without intermediate units, under the conditions of real production.

Here is one of the forms of this cooperation. Who should produce the products needed by the school children? It seems that the children should produce them under the leadership of skilled mentors -- workers and engineers. There are some known examples: the Mal'chish radio and micro-electric engines. The products must be designed. This is a complicated matter, and if only school children who have demonstrated a great inclination for technical creativity are allowed to participate in the design work in the initial period, during the process of production, taking into account improvement of the product, the majority of the children can design and engage in efficiency work. It is important to guide the work correctly and direct the activity of the school children.

#### "Secrets" of Our "Kitchen"

The organization of experimental design work in the club is supported in all ways by surrounding people -- scientists and workers of scientific research institutes of the SO AN SSSR, design bureaus, and the student aktiv of Novosibirsk State University.

Initially we planned to separate design work and the actual creation of models. But then it turned out that it was more efficient to conduct design work in each laboratory. When forming the laboratories and divisions we devoted a great deal of attention to the selection of leaders. The first leaders were the engineer-designer of the Institute of Automation and Electrometry of the SO AN SSSR, V. N. Mikulin; the junior scientific associate (now candidate of technical sciences), V. P. Fomichev, from the Institute of Applied and Theoretical Mechanics; the instructor of labor and drawing, V. G. Tambovtsev who is one of the most experienced organizers of nonschool studies; M. L. Larkin, who heads the laboratory of experimental design; and also S.S. Voynov, a great astronomy buff (he is now in charge of the observatory at the Olenok all-union pioneer camp).

In addition to all this, we created an aktiv of public consultants made up of associates of scientific research institutes and design bureaus as well as

organizations of the SO AN SSSR. Having profound professional knowledge and experience in design work, the collective of leaders was able to develop the interest of the school children toward one area of technology or another. The methods which they have used and are using in their work vary, but, by analyzing their experience and the results that have been achieved, one can formulate certain general points that contribute, in our opinion, to the productive work of the design circles. And the results of our work are these: more than 300 technical designs of school children, which were done as completed technical document, and more than 200 completed models, instruments, and devices which have been shown at various "adult" and "children's" exhibitions.

Elements of innovation in each lesson contribute to activating the design work of the school child. A convincing example is the development in the radiology laboratories of the KYuT of a series of instruments for diagnosing and treating eye diseases. The work for creating medical equipment was initially done through "good offices" -- manufacturing small items for the oculist. A deeper penetration into the problems of ophthalmology led to the creation of the KYuT student-school design bureau, "Ritm," whose subject matter is determined by the medical technical council. An exhibit of more than 30 instruments -- developments of the "Ritm" design bureau -- was rated highly by specialists at the All-Union Congress of Ophthalmologists in Rostov. Thus the work should be socially useful, and the nature of the studies in the circle should presuppose active enlistment of the school children in the process of independent research of a problem-oriented nature. This is real efficiency and invention work.

Another typical feature of the content of the work of the design circle, in our opinion, is the clarity of the technical idea itself, the obviousness of the effect that accompanies the result of the work. This point pertains primarily to design circles that concentrate on technical sports equipment, where the originality of the creative decision influences the distribution of the positions among the participants in competitions.

One of the major mistakes which has been typical of children's "design bureaus" up to this point is the attempt to solve "world" problems, which attract the more emotional young designers. Adolescents unceremoniously begin to design real missiles and sputniks, submarines and flying equipment, or even more complicated structure. But the enthusiasm of the boys and girls, which wins one over at first, falls away when they encounter work which is too difficult or fatiguing for them. The work remains incomplete and, which is much more important, the young technicians themselves lose interest. Consequently, the leader of a group should always clearly present the possible result of the work and the ways of achieving it. On the other hand, the material and technical support for the subject should also be carefully planned. Any situation in work requires more efforts for setting and maintaining the rate of activity of members of the circle.

The arrangement of scientific, design and experimental work in technical circles and laboratories for school children begins with the most important and difficult stage -- searching for the problem or technical task. In our

club we have become convinced that it is necessary to look for tasks around oneself, nearby, and one must learn to see them. But certainly not just any technical task can be accepted for solution in a technical circle.

It is desirable to search for the problem with the active participation of the school children, when the leader does not suggest, but just orients the members of the circle. In this stage it is very useful to enlist public consultants -- specialists of enterprise, design bureaus or scientific research institutes who can discuss clearly and interestingly the modern problems in the selected area.

For example, the problem of the "mechanical mole" arose during "random" observation of the laying of cable along underground pipes from well to well. We know what, sometimes improbable, methods cable layers turn to in cases when they cannot manage to push the steel wire through the pipe with its joints and bends. Sometimes small animals are made to do this. They move through the sections of the pipe with a thin cord attached to them. Thus the technical assignment called "Mole" appeared -- a device for moving within the pipe and pulling a cord or line. The obvious need for the mechanism and its subjective innovation for members of the circle (in general, designs of "moles" exist, but there is still work to be done here) led to intensive creative work in the laboratory. The design, which seemed simple at first glance, gave rise to one problem after another. These included the creation of a mechanism for transforming the movement from the electric engine, the method of movement, the possibility of getting through bends, and, finally, the simplicity and low cost of the design. The variant of the technical decision that was adopted did not appear immediately. They analyzed devices with telescopic pipes, folding "shovels," roller propellers, and so forth. The "design" of the body of the ordinary earth worm prompted the final solution. Members of the circle displayed powers of observation and were able to borrow a "prepared" solution from living nature. The proposed design, of course, does not claim to be absolutely new or perfect, but it is an original technical decision which opens up a broad field for further development. On the basis of such a device, equipped, for example, with special measurement or monitoring gauges, it is possible to develop an instrument for preventive analysis of the condition of the internal surface of large pipelines. And if the "mole" were equipped with a television camera ... Many variants of the manufacture and application of the mechanism are accessible to the school children in the technical circles.

We see that, in order to solve such complicated problems which contain elements of various branches of science, it is necessary to introduce into the studies of the circle a special theoretical course so that, on the basis of general educational sciences, the school child will acquire the fundamentals of applied engineering disciplines. This would apparently provide a partial solution to the problem of polytechnical education. The school children are given an idea of the applied significance of fundamental general educational sciences.

We consider the selection of the subject for each circle member or group of young designers to be a responsible part of the work. In all cases its

urgency has unwaveringly contributed to the successful work of the circle members. And they have formulated the technical assignment. A clear example of this work was the creation of the electric car in the laboratory for designing small technical equipment, where all kinds of work, from the idea (a means of transportation which caused almost no pollution of the environment) to the preparation for publication of the description of the design on the pages of the magazine MODELIST-KONSTRUKTOR was done by two tenth-grade designers.

No less crucial today is the task of assimilating the North, and creating means of transportation for regions which are hard to get to. Andrey Nalimov and Yevgeniy Stepanenko worked for 3 years on the creation of a design of cross-country vehicle for foresters. Another design for a cross-country vehicle was created by Sasha Kizhevatov. It was exhibited successfully at exhibitions in Novosibirsk and the Exhibition of the Achievements of the USSR National Economy.

In addition to pure design work, the experimental design area is being developed in circles of the club, in the laboratory for physics experiments. The nature of the work in this laboratory is similar to research work. While in design circles most of the attention is devoted to good design development of the problem, using knowledge acquired in experiments, here the experiment comes to the fore, and the design development is a means of implementing it. This nature of the work requires of the circle members fairly developed abstract thinking, which is necessary for judging the experiment and its results, and it also requires persistence and confidence in one's abilities.

An analysis of the design projects of school children convinces us that they are a powerful educational tool and a decisive factor in occupational orientation.

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## FORMER CLUB MEMBERS RESPOND TO EKO'S SURVEY

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian  
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[Article: "The KYuT on the Threshold of its 20th Anniversary"]

[Text] "My Selection is Not Random"

About 80 percent of the graduates of young technicians clubs continue their education in VUZes and tekhnikums or go to work in the specialties chosen in the circles. When preparing the material on the KYuT, we met with former circle members and asked them the question: "What did the studies in the club give you?" Here are their answers.

Andrey Aleksandrovich Panteleyev, lathe operator of the Institute of Nuclear Physics of the SO AN SSSR [Siberian Branch of the USSR Academy of Sciences]:

I began to go to the club in the sixth grade. I liked it very much. Why? In the first place, the work was interesting. For example, making an electric car myself and then riding in it in a parade! What boy would not like that?! In the second place, the leaders were very good. As distinct from school teachers, they were your equals. One could talk about anything with them. I recall when I came to the KYuT of Academician M. A. Lavrent'yev, who was always cheerful and joked and worked with us.

What did the KYuT give me? I learned to work with my hands there, and to deal with technical equipment. I tried working on various machine tools. I liked the lathe, and my work turned out to be pretty good. This is probably why I selected this occupation. So my selection was not random.

Georgiy Alekseyevich Pozdnyakov, scientific associate of the Institute of Theoretical and Applied Mechanics of the SO AN SSSR:

My friend in the ninth grade brought me into the club. He was going to the physics experimental laboratory, and he told me it was very interesting there. I must say that I had not had good grades in physics, but I had acquired the knowledge that was in the text book.

I liked the KYuT immediately. I liked the interesting work, the warm, friendly relations between the mentors and the circle members, and I also liked the fact that although the kids were working on various instruments, they kept up with each other's work, discussed their ideas, consulted, and helped one another.

I recall that V. P. Fomichev, the leader of our laboratory, suggested several ideas to me since I had no clear-cut scientific interests at the time. One of them -- designing an impulse plasmotron -- interested me. I took on this job. I worked for more than a year. It was precisely at this time that I was seriously drawn into physics. Vladislav Pavlovich guided my work, but he did not prompt me, determine its direction, or force me to evaluate variants and compare.

In 1971 I took my plasmotron to the All-Union Exhibition of Scientific and Technical Creativity of Youth in Moscow. Subsequently, more or less automatically, I entered the physics department of NGU, I graduated in the specialty "Plasma Physics," and now I am working in the area of plasma mechanics in the same laboratory with V. P. Fomichev.

Andrey Ivanovich Popov, scientific associate, graduate of NETI:

My father sent me to the KYuT when I was in the fifth grade. I studied with A. M. Terskiye in the laboratory of automation and technical cybernetics, as it was called at that time, and worked on designing radio equipment. I won a prize in the Exhibition of the Achievements of the USSR National Economy. After school I entered the Novosibirsk Electrical Engineering Institute in the radio equipment department. This was a decision I had made long ago.

The practical knowledge I had acquired in the KYuT helped me a lot in the institute as well. I must say that of the 20 students in our group, only 8 were working with radio equipment and had an idea about their future occupation, and had practical skills in this area. Of course we had production practice in the plants, but, as a rule, it was limited to work on the conveyor, and this did not provide a complete idea of the nature of the future work either. Thus the majority of students, after finishing the institute, had only theoretical knowledge, and only subsequently, in production, were they forced to deal with practical matters.

It was different for me. I mastered the lecture material fairly easily because the theoretical points were reinforced with practical knowledge which I had acquired in the KYuT. Therefore the transfer to work did not involve a long and difficult time for me either.

Sergey Anatol'yevich Zdorovenko, a student of the fourth class in the aircraft construction department of the Novosibirsk Electrical Engineering Institute:

I came to the KYuT in 1976. At that time I was studying in the physics-mathematics school at Novosibirsk State University. I still work in the club regularly. I am now preparing a new model of a timer for the new season.

I must say that I did not enter the NETI immediately. I studied in the mathematics department of the university for a year. But I came to understand that this was not for me. Pure mathematics is abstract, and I am interested in work with concrete things, whose result can be touched with your hands, as it were. Of course, when I was selecting a new department, its name was very important to me.

What did studies in the club give to me and my friends? I think that they contributed greatly to character development.

Model building combines both a competitive spirit and painstaking work on creating the model, which requires self-control, patience and persistence. For example, I will have spent from 6 to 8 months on the manufacture of the timer model. Then comes the great holiday of life -- the competition! Although even at the competitions nobody is guaranteed success. It sometimes happens that the model breaks and it is necessary to start over from the beginning. Of course, this is very discouraging for an adolescent, and here it is important that our leader, Yu. P. Gorshkov, is nearby. He always gives support at such difficult times.

I have times when I am overloaded with studies in the club and apathy sets in. I stay away for 2 or 3 months, but then I feel a hunger, I even dream about aircraft -- and I run back to the KYut.

Some adolescents who participate in the club enter VUZes and tekhnikums while others go into production. But the majority of them have an important advantage over their contemporaries: their selection is not random.

Experience is Accumulated ... What Next?

By a decree of the AUCCTU, the young technicians club of the SO AN SSSR has become a methodological center for children's technical creativity in Siberia and the Far East. Hence there is another aspect of its activity -- methodological work. What does it consist of?

Primarily, this involves generalizing the experience of the laboratories and drawing up methodological recommendations and prospectuses. The methodological materials are sent to more than 200 clubs and young technicians stations in the country. Information cards have been compiled concerning nonschool institutions with which the KYuT's are associated. These indicate the kind of interesting experience that has been accumulated here, and the methodological aids that have been developed which can be useful to others. Thus experience is generalized in the club, and it has data concerning the condition of children's technical creativity in the country as a whole.

On the basis of the KYuT, through the AUCCTU, interoblast courses are being held for workers of the country's clubs that are under trade union jurisdiction. They are organized twice a year, approximately 200 people participate in them, and they last a month.

A methodologist of the young technicians club, N. A. Poleshchuk, is organizing the work of the council of directors of KYuT's in Novosibirsk and the oblast. It is of principal importance that representatives of nonschool institutions who deal with children's technical creativity participate in the work of the council, regardless of their branch jurisdiction. The KYuT tries to step across departmental barriers.

The main task of the council of directors as the coordinating territorial association is to improve the quality of the work and to publicize technical creativity among school children of Novosibirsk and the oblast. Methodological associations have been created for various areas of the work, and general measures are being taken -- reviews and competitions. In 1984 it is intended to conduct city meetings for ship, aircraft and automotive work, and for amateurs involved with radio equipment and astronomy.

Unfortunately, not many clubs in our country can apply the recommendations of the KYuT of the SO AN SSSR or take advantage of its richest experience: only about 10 of the 1,500 clubs have the material base necessary for this.

#### If You Can -- Improve

The young technicians club is a collective member of the All-Union Society of Efficiency Experts and Inventors. This kind of activity of children is greatly respected here. The most interesting scientific and technical decisions are defended at meetings of the VOIR council. At one time Academician M. A. Lavrent'yev also participated in them. Special author's certificates are awarded to those who have presented a successful defense.

Here are a couple of proposals that have been presented for consideration by the VOIR council at various times.

The electronics laboratory suggests an instrument for measuring the capacities of electrolytic condensors which are necessary when developing various kinds of radio equipment. As far as we know, industry is not producing such products.

Pavel Semenov from the aircraft model laboratory suggests a design of an automated machine for landing free flying models of aircraft, using an automatic timer release from a camera. On the basis of this design, it became possible to create a program for controlling the flight.

Having had a hard time dismantling an engine clutch, the seventh grader Vasiliy Lasayev from the laboratory for designing small technical equipment suggested and manufactured a device which looks like scissors from the outside with parts that have the form of a clutch. Now any circle member can dismantle and assemble the clutch mechanism in 2-3 minutes.

Efficiency and invention work in the young technicians clubs could be much more productive if the oblast VOIR council were to take the children's work seriously and create for them intelligible books related to technical problems.

Of course, much of what the children suggest is only subjectively innovative. Such designs already exist, but the important thing is that efficiency work teaches them to enter boldly into the surrounding world of phenomena and objects.

#### Searching for Ways of Interaction

How can relations between young technicians clubs and the school education system be arranged? On what basis? How can the modern school, which is experiencing a mass of difficulties, rely on the KYuT's? What limits their relations now?

It is difficult to give exhaustive answers to these questions, as far as we know, official pedagogical levels are not considering them either. Therefore we decided to ask these questions of people who encounter this problem to one degree or another -- a club worker, a teacher and the former head of the rayon public education division of Novosibirsk.

And so, the first question: How are relations between the school and the KYuT taking form?

This is discussed by Yuriy Petrovich Gorshkov, head of the laboratory for aircraft models:

A couple of years ago a boy in the fifth grade began to study with me. I shall call him, say, Igor. He grew up without a father, and his mother was only interested in her son's education from time to time. Igor was left to his own devices, wandered through the streets, fished, and played hockey. He was a poor student. Of course, I am interested in the school work of my children, and I found out something from conversations with him. For we talked about a lot of things while we were working -- about school, about life... All of Igor's desires in life consisted of the following: to get out of school as quickly as possible, to become a chauffeur and make a lot of money.

At first Igor came to the KYuT irregularly. Sometimes he would skip a couple of classes, and then he would work not only with his own group, but also with others (I permitted especially involved children to work with other groups). At first he would even swipe things from the laboratory. I had to have a talk with him -- and this stopped. As he began to master the models, he came to have more confidence in himself. This proceeded gradually. Of course I tried to support him in all ways, and took note of any success. I praised him more frequently than the others. Igor acquired the ability to work with engines; he had a flair for this. This increased his authority in the eyes of his fellows. Usually reticent (what was there to talk about: he was always alone, and he was the worst student in school), he sometimes tried to share

things with me. But he was inarticulate; his language was not developed at all.

In the spring, in the sixth grade, he became the rayon champion in aircraft models. This was announced on the school radio. The boy, who had always been in the "shadows," suddenly became the center of attention.

At that time the school director came to me, demanding that I "put pressure" on Igor, and not allow him to come to the classes if he was not doing well in school. I started to talk to him and tried to prove to him that it was necessary for him to study. Igor responded that he did not want to study, that school assignments were unnecessary to him in any case. Nonetheless I convinced him to study the German language with me. He was especially behind in this. True, these lessons did not last very long.

In the seventh grade Igor became the oblast champion in high-speed models and air combat models, along with another adolescent. Of course, this was a great success. These achievements gave Igor wings. He began to literally lose himself in the KYuT. But at the same time he finally dropped out of school.

The school "put pressure" on me again, and I -- on Igor. He promised that he would study harder, but he did not keep his promises. In the eighth grade he began to come to the KYuT less frequently, and finally stopped altogether. I tried to talk with him, but these conversations did not lead to anything positive. He almost never showed up at school.

Later I found out that Igor still passed the eighth grade, and he entered a vocational and technical school. He no longer engaged in technical creativity. In the group he was an unnoticed, in no way remarkable adolescent who was interested in only one thing -- money. Igor decided for himself that he would no longer be controlled by school. Pressure is not a method of working with people like Igor. From the moment we began to exert "pressure" on the adolescent, we lost him.

And so more frequently the school simply pays no attention to the KYuT. Without trying to understand its specific nature, they try to make it a kind of "means of pressure" on unsuccessful students. This decision does not require thought or analysis. It is enough to get on the telephone. The result of this, as a rule, is pathetic: both the school and the KYuT lose their influence on the student, and his personal qualities still remain unrealized.

The second question: how can the school rely on the KYuT?

This is discussed by an honored teacher of the RSFSR school, a physics instructor of school No 25 of Novosibirsk, Mal'vina Stepanovna Pozolotina.

I have been in charge of the society of physics lovers, "Kvant," for 9 years now. It has four sections: theoretical, experimental, informational and editorial, which produces the oral magazine, FIZIKA I ZHIZN'. Our charter reads: "anyone can become a member who has done something useful for the

physics laboratory, participates actively in publicizing science and technology, or helps comrades in mastering physics.

I am capable of doing the organizational work for the theoretical, informational and editorial sections. But when it came to the experimental section, I understood that this was too much for one person. At that time I took my students to the KYuT and suggested that we cooperate. Now the work of this section is done in the KYuT. The children design and manufacture instruments. They work in the excellent laboratories of the club and use its materials.

We keep all the instruments that have been created in the physics laboratory. This is a permanent exhibition of technical creativity. Also here is the electrification chart of the GOELRO plan, a homemade radio which the children listen to between classes, various kinds of relays (they are easily removed from their plastic cases and can be used quickly in the lesson), an instrument that illustrates the law of impulse, a model of the Maxwell curve, and many other things.

By taking advantage of this wealth, each student acquires additional "quantums" of knowledge in excess of the school program.

The "school - KYuT" cooperation is very effective, and I would like for it not to be limited to our school alone.

The third question: On what basis can the interrelations between the schools and the young technicians clubs be arranged?

This is discussed by Vasiliy Vasil'yevich Magro, who has worked for more than 15 years as head of the rayon public education division of the Sovetskiy Rayispolkom of Novosibirsk:

Today the school is incapable of solving the problems related to the development of the children's technical creativity. We have neither the material base nor the trained personnel necessary for this. It would seem that teachers of labor and physics could handle this. But physics teachers in the schools are mostly women, who do not have the skills necessary for this kind of activity. They are overloaded with lessons and extracurricular activities. As for teachers of labor, they have a low professional level (in Sovetskiy Rayon only two of them have a higher education), and, moreover, they are just as overloaded with lessons as the others are. The schools do not have the necessary material base. For these reasons, the tasks of polytechnical education, occupational orientation and labor education in general are carried out poorly.

Against this background, the experience of the KYuT of the SO AN SSSR is invaluable. It can take on tasks which the school is incapable of dealing with.

A new step on the path of development of the KYut is a combination of the processes of designing and productive labor. In our opinion it would be

expedient to create in Akademgorodok a training and production combine and to combine it with the KYuT. This kind of union would make it possible to solve the problems of labor education of school children.

All that I have said up to this point certainly does not mean that the club has no problems. There are plenty of them, and they are typical of all extracurricular institutions.

I wish to mention the material base. The position of the young technicians club of the SO AN SSSR cannot be compared with the position of the majority of the other clubs in the country. The Siberian Branch is proud of its KYuT, they love it, and they are concerned about it. But even here there are problems with obtaining material values, including written-off parts, wires and condensors.

Five years ago the CPSU Central Committee and the USSR Council of Ministers published the decree of 22 December 1977, "On Further Improvement of Training and Education of Students in General Educational Schools and Their Preparation for Work." But even today, for example, in order for transfer material values from the institute to the KYuT to be legal, it is necessary to have a decision of the Presidium of the SO AN SSSR. And this is necessary each time.

It is time to change over to strengthening the entire system of young technicians clubs in the country. This is not just an added burden for the school; and the experience of the KYuT of the SO AN SSSR convinces us, this is a new organizational form which undoubtedly has a great future.

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LAB CHIEF SUGGESTS TRAINING TECHNIQUES FOR YOUNG INNOVATORS

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian  
No 10, Oct 83 pp 121-126

[Article by V. G. Tambovtsev, chief of laboratory for designing small technical equipment: "They Will Shake Our Hands for This Later..."]

[Text] I have been working in the system of children's technical creativity for more than 20 years. Much has changed during that time. Previously, for example, in the circle an adolescent was given a readymade motorcycle and was taught to ride and service it. All this is necessary and interesting. But what kind of a person will such a young technician grow up to be? A good performer. But we need active, creative individuals. But now -- and I have a good sense of this -- a new stage has begun in children's technical creativity. I shall discuss those changes which have taken place in the direction of work of the circles in my area.

When I came to the system of children's technical creativity, I started to think about where to begin. An adolescent (and I have been working with children in the seventh through tenth grades and students in vocational and technical schools, many of whom are considered by the school to be "difficult" and come from bad families) needs work whose results can be demonstrated when people come together. It is necessary to have competitions in which one can exert all one's efforts in order to win. An adolescent should really work. Socially useful labor which is rewarded by the society (victory in competitions, medals at exhibitions, gifts) regenerate these children.

We began with small motorcycles and small cross country vehicles. Why? I told all the children who came to the laboratory: "Draw what you want to do." And each one of them drew two wheels and a steering wheel. I told them: "That is too simple, it is not interesting. Think about it some more." Then they drew four wheels and a steering wheel.

It is necessary to find for children objects of technical creativity which will evoke a stable interest. For work with metal is very labor-intensive. An adolescent is attracted by speed and by the fact that he himself can make a machine. Now, taking into account this passion of the children, we are making a monocycle -- a large wheel with a diameter of 1.5 meters, and the person

sits inside it. In order to interest the adolescent, we are using designs that have already been created. The chap knows that in his garage is his vehicle, with which he can participate in parades, trips and competitions. And in the classes of the circle we are designing an engine block, a mini-combine, and devices for removing snow.

We worked this way for 10 years. We have accumulated more than 50 designs. Then we began gradually to change the subject matter, trying to make the circle members come up with more useful and necessary devices, and at the same time not to copy that which is being produced by industry.

Thus we came up with the idea of creating a series of means of minor mechanization for agriculture or for farmstead plots and dachas. In the first place, the plant designers are not terribly interested in this, and, in the second place, public opinion and the attitude toward labor on private subsidiary farms have changed. And the children are well aware of this. Had we begun to make these combines 15 years ago, people would simply have laughed at us.

In 1972 during one of the exhibitions, an enthusiast from Chulymskiy Rayon asked us to help to make a universal machine for agriculture which could be used for plowing, and mowing, and travelling through the roadless countryside at any time of year. So we made the "Cheburashka."

The machine can do many things: in the spring it is used to plow and plant potatoes, cultivate them, and earth them up (all this is done with special settings). When mowing time comes, it mows and rakes the hay with tractor rakes, and stacks it with hay sweep. In the autumn a special plow is attached to the machine, which removes the potatoes from the ground. All that is left is to gather them and load them into the boxes of these same "Cheburashkas." In order to haul firewood or other cargo, a trailer with a capacity of 2 tons is attached to the machine. And if it is necessary to haul hay, special cable lifters are used. They lift the stack and place it on the hay sweep, which is pulled by this same "Cheburashka." When the roads are bad or there are no roads the "Cheburashka" is an irreplaceable means of ground transportation.

In designing the "Cheburashka" we used an interesting innovation: we took the engine and differential from a side car and combined them into one block, having removed all the unreliable elements. This turned out to be a very good decision. We then used this idea for designing the four-seat passenger vehicle, "Malyutka," in which we go on trips. I must mention that trips in vehicles we make ourselves (5-6 machines) are a tradition for us.

In 15 years in the laboratory we have created more than 60 of the most varied devices. Among them there are not even two that are identical. These include small motorcycles with side cars and without them, an electric cart, a bicycle, a tricycle, minicars, a four-seat automobile, caterpillar and six-wheeled cross country vehicles, a propeller-driven automobile, electric and propeller-driven carts, a microtractor, a motorized plow, a lawn mower, a rotary snow remover, a motor scooter, and a series of training motorcycles. The children have constructed a miniature copy of the armoured car from which

V. I. Lenin spoke in April 1917.

We have interesting ideas. We need a small caterpillar combine which will do all the work for planting, raising, cultivating and harvesting potatoes. We want to make small lawn mowers and mowers for dacha plots. Perhaps we will design a device for digging pits. The range of subjects is broad, and there are many objects for technical creativity.

We are trying to find some new organizational forms of work, for example, carrying out specific assignments of enterprises. There have already been examples of this in the KYuT. Assignments from institutes of the Siberian Branch have been carried out by the laboratories for physics experiments, radio electronics, and aircraft modelling. But we want the children not only to create mini-devices, but also to work with them during the summer.

At the request of the forest protection experimental station, we are making machines for cultivating flower beds and circles around the trunks of trees. They are spending too much time cultivating these by hand. The devices should be light so that they can be moved from tree to tree without difficulty. The task is interesting. The experimental farm of the institute of cytology asked us to create a device for cultivating garden beds.

Such are our prospects.

I am proud of the fact that I am developing these children into excellent workers -- thinking, creative and highly skilled individuals. This is especially important now, when production labor has become unprestigious in the eyes of many, and the state vocational and technical schools and production receive mainly children who have done badly in school, those same "difficult" adolescents.

Most of my children enter vocational and technical schools and tekhnikums, and only a few go to technical VUZes. What can studies in the KYuT provide for them? I asked this question of a former member of my circle, the automatic crane operator, V. V. Kryukov, who is now helping me in my work. He gave this example. The young people who had completed the vocational and technical school along with him had already had several accidents, while everything went smoothly for those who had been KYuT members. Anyone who has not dealt with technical equipment since childhood is less well oriented under production conditions, less observant and less independent.

Science has not yet determined the criteria for evaluating our work, but I have one of my own: with children who have worked with me for 3-4 years, one could even go to the North Pole! They have no problems on any trip. They have become accustomed to thinking, and they know real life.

Unfortunately, few young technicians clubs in the country can perform work similar to ours. Why?

I shall begin with the worst thing, in my opinion: the training of personnel. For example, I experience very keenly my lack of special training. I began my

labor biography as a welder at a steamship repair plant, and later became a master. I completed two tekhnikums -- railroad and electrical mechanics. I worked for 2 years in an instrument shop. There I had to deal with blueprints, which later proved very useful.

A law concerning the connection between school and life was enacted in 1958. Rapid construction of school shops was started, and patronage ties appeared between enterprises and schools. I was offered a chance to transfer to work in the school as a teacher of labor and drawing. This was a new, unusual, and difficult job for me. But here I learned to work with children. The plant and the school -- these are my two "universities."

I came to the KYuT in 1969. Here was a different environment and different children. My lack of pedagogical training began to have a critical effect. But then it turned out that in our country no specialists are trained for children's technical creativity. There are only five pedagogical institutes which have departments of "General technical disciplines and labor," which train teachers of labor training for the schools. The level of training in these departments is extremely low, the material base is poor, and there is not enough equipment. But even the people who finish in these departments do not go on to work in young technicians clubs. I have been working in the KYuT for 14 years and I can count on my fingers the number of young people who would enter our system and work devotedly. An engineer will not come here to work because it is not prestigious for him. For example, graduates of the Novosibirsk Electrical Engineering Institute have come to work in our KYuT, people who worked previously in technical design, but they could not adjust. It is difficult for a pedagogue to work here because he does not have enough knowledge in the area of technical equipment.

Perhaps we should organize permanently continuing courses for practical workers who have come to our system?

It is not a bad idea to think about a system of payment for workers of extracurricular institutions for children's technical creativity. Now, by a decision of the AUCCTU, our KYuT has become the methodological center for children's technical creativity in Siberia and the Far East. But if we are to work in the methodological center, we ourselves should be methodologists. Actually, this is the case. We speak at seminars and courses for directors of KYuT's, and we share our experience. Obviously, we should be paid additionally for this work. It would not be a bad idea to introduce a scale, as in the schools: teacher-methodologist, senior teacher, junior teacher.

The poor wages have led to a situation where many oblast young technicians stations are led by former school children who do not have sufficient knowledge, and "serve" only a year or two here. Clearly, one cannot speak about the high quality of their work.

And another very important aspect is the creation of a stable material base for the young technicians clubs.

The capacities of the clubs are extremely small. For example, our club is

capable of accomodating 700 people, while it should be able to handle about 3,000 adolescents in the rayon. It is necessary to weed out, for example, those who have C's, and tell them to come back the next year. But the next year they do not come back; they are drawn into a street gang. And it can happen that even after school a chap will torment himself and his parents: all the roads are open, but which should he take...

People have long been talking and writing about the fact that written-off parts and metal scraps should be given to young technicians clubs. Why, for example, should we purchase a new carburetor and give it to a boy who will repeatedly take it apart. Of course he will break something and lose some part. And the institutions and enterprises write off a large quantity of technical equipment each year, and throw it away as scrap metal. Why not give it to some KYuT members? If I give a written-off part to a KYuT member, I give him the right to make a mistake. And this is very important. And, after all, we do not need an entire Volga which has been written off! We need small things -- thin-walled pipes, metal cuttings, knobs, pieces of rope, pieces of glass and so forth.

I have already discussed the request from the forest protection experimental station. In order to fulfill the order, we need materials. We asked the forest protection experimental station for written-off lawn mowers. They were prepared to give them to us, but there are instructions -- written-off lawn mowers are to be dismantled and destroyed in the presence of a commission! It was necessary to expend a good deal of effort to acquire them. It turns out that they trust us with their children, but they do not trust us with written-off metal.

And this in spite of the fact that as early as 1978 the USSR Council of Ministers published a decree that permitted enterprises and organizations to give young technicians clubs and stations material values free of charge. I think that the material situation of the KYuT's would improve significantly if the business executives understood the importance of our work. An example is the attitude of a most eminent organizer of science, the blessed memory of the man, Mikhail Alekseyevich Lavrent'yev, who once said about the KYuT: "They will shake our hand for this later..."

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## DESCRIPTION OF YOUNG TECHNICIANS CLUB ACTIVITIES

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian  
No 10, Oct 83 pp 127-135

[Text] From the Prospectus of the Young Technicians Club

The KYuT [young technicians club] has a special laboratory building at its disposal, where more than 700 school children work each year. They are students in the first through tenth grades who belong to 60 circles: of mechanical designers, physicists-electronics specialists, astronomers, aircraft, automobile and ship modellers, sportsmen with automobiles and motor boats, artistic technologists, and people who work in movie and photography studios.

The KYuT is financed by the Siberian Branch of the USSR Academy of Sciences and the combined trade union committee of the SO AN SSSR.

The KYuT offers each school child the opportunity to work in that branch of technology which attracts him most, where he can reveal his technical capabilities most fully.

The KYut contributes to the development in school children of a lasting interest in science and technology, the skills of efficiency and invention work, technical thinking and creative sharpness.

The club's laboratory-production base has been granted to the school children of the physics and mathematics school for conducting applied optional work in mechanics, radio electronics, physics, astronomy and technical design.

### The Laboratory for Designing Small Technical Equipment

More than 50 students of the seventh through tenth grades, vocational and technical schools, and teknikums work in the five circles here each year. During the past 10 years, 31 members of the circles have been awarded medals of the Exhibition of the Achievements of the USSR National Economy, and 34 have won prizes in the Exhibition of Scientific and Technical Creativity of Youth in Moscow and have been awarded certificates and medals of the Komsomol Central Committee. V. G. Tambovtsev was awarded gold, silver and bronze

medals of the Exhibition of the Achievements of the USSR National Economy. Designs from the laboratory have been shown in exhibitions in Mexico, Peru, Hungary and Italy.

#### The Laboratory of Automation and Technical Cybernetics

The leader is A. M. Terskikh. He was graduated from the Tomsk Polytechnical Institute. He worked in one of the scientific research institutes of the SO AN SSSR. He has worked in the KYuT since 1964.

The main areas of the laboratory's work are:

Computer mechanics, devices for modelling game relationships, designing automatic game devices.

Instruments for scientific work in the area of labor physiology and sports, and medicine. More than 100 instruments have been shown at the Exhibition of the Achievements of the USSR National Economy, all-union exhibitions, conferences and so forth.

Solving practical problems in electrification and automation of agriculture.

The development of household appliances.

There are 120 boys and girls from the laboratory who have won prizes at all-union exhibitions, and 65 have been awarded medals of the Exhibition of the Achievements of the USSR National Economy. A. M. Terskikh has been awarded three gold and three silver medals of the Exhibition of the Achievements of the USSR National Economy.

#### The Laboratory for Physics Experiments

The leader is V. P. Fomichev, candidate of technical sciences and associate of the Institute of Theoretical and Applied Mechanics of the SO AN SSSR. He has been in the KYuT since 1968.

The goal of the laboratory's work is to familiarize the students with experimental physics and instill in them the skills of conducting physics experiments. The selection of subjects is determined by the interests of the circle members. Therefore the laboratory maintains ties with many research institutes of the Siberian Branch of the USSR Academy of Sciences. It has especially close contacts with institutes that do not have their own material base, for which the circle members make small instruments, for example, the actograph (an instrument for determining the level of stress in muscles) which was created for the Institute of Biology of the SO AN SSSR. There are two circles working in the laboratory, which include children from the sixth through the ninth grades.

#### The Astronomy Observatory

The leader is V. I. Kirichenko. He has been interested in astronomy since he

was 10. He completed grade school in Novosibirsk Oblast and then the electrical machine building tekhnikum. Since 1969, on a recommendation from the Irkutsk astronomers, he has been working in the KYuT.

The main areas of the work in the KYuT are:

Scientific research and research on recommendations and assignments from astronomy institutions.

Cognitive and scientific-practical observations (expeditions, meetings, and so forth).

Design and improvement of astronomy instruments and equipment.

Methodological work (the observatory is the methodological center for organizing the work of children's astronomy collectives on the territory of the country beyond the Urals).

From 35 to 50 boys and girls from the fourth through the tenth grades work in the laboratory.

The work of the circle members has repeatedly been noted by awards at all-union exhibitions. During 1982 alone they received 11 medals at the Exhibition of the Achievements of the USSR National Economy for a series of astronomy instruments, observations with them, and for work for forming and equipping the observatory. The bronze medal of the Exhibition of the Achievements of the USSR National Economy was awarded to the public leaders of one of the circles of the observatory, B. F. Bidyugov, for his work on measuring heat emissions of samples of soil from the place where the Tungus meteorite landed.

#### The Laboratory of Aircraft Models

The leader is Yu. P. Gorshkov. He was graduated from the aircraft construction department of the Novosibirsk Electrical Engineering Institute. He worked as a master and then as a designer at the Plant imeni V. P. Chkalov, and later in the Institute of Nuclear Physics of the SO AN SSSR. He has been working in the KYuT since 1972. He has been working with aircraft modelling since 1953. He is a candidate for master of sports and a judge of the republic category.

The main directions of the laboratory's work are:

The construction of models of sports classes (gliders, rubber-motor models of aircraft, models with piston engines, radio controlled models) and participation in competitions with them.

The construction of experimental models which are not included in the program for competition, but attract the youth by their unusual design and the possibility of testing some technical innovation (the "flying wing," delta planes, hydroplanes, models with electric engines).

Demonstration flights of models for school children of Akademgorodok and residents of Novosibirsk, and also in the pioneer camp.

Many of the children have sports ratings; two have the second and two have the first. The circle member, I. Filatov, is a candidate for master of sports and an adult champion in Novosibirsk. P. Tolokonnikov was the champion of Russia in 1981 for radio controlled models.

The KYuT directs the basic activity of the school children toward solving technical problems in socially useful subjects. Thus they have already developed a series of medical instruments for diagnosing and treating illnesses and instruments for examining man's physiological condition, and they are carrying out projects within their power which are suggested by scientific research institutes and design bureaus of the Novosibirsk scientific center.

The KYuT conducts mass measures for school children of Akademgorodok. These include the traditional days of science and technology, competitions of visionaries, and so forth. The young technicians are active participants in all celebrations devoted to glorious dates in our country's history.

The KYuT maintains long-term friendly ties with young technicians of Bulgaria, Yugoslavia and the Mongolian People's Republic, as well as with dozens of nonschool institutions of the USSR.

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## LEGAL EXPERT RESPONDS TO PREVIOUS ARTICLE ON CONTRACTUAL OBLIGATIONS

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian  
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[Article by Ya. N. Kovalerchuk, candidate of jurisprudence, Scientific Research Economics Institute under the Uzbek SSR Gosplan (Tashkent) in response to the article by L. I. Mokeyeva, "Evaluation of the Work of Enterprises, Taking Into Account the Fulfillment of Agreements: Unsolved Problems" published in EKO, No 3, 1982]

We should like to add a legal analysis to the economic analysis of problems of failure to fulfill contractual commitments, which was discussed by L. I. Mokeyeva. This will help to clarify better why, in spite of the abundance of normative documents, including from the highest level, interruptions in deliveries continue to be one of the most significant obstacles to the fulfillment of plans for economic and social development.

It should be noted that the most important areas for development of legislation on deliveries include increasing the influence on the property interests of corporate bodies (associations, enterprises, organizations) and specific officials who are responsible for reliable fulfillment of deliveries in keeping with agreements that have been concluded.

### The Responsibility of Corporate Bodies

The obligation to conclude agreements, with which this responsibility is associated, was established more than a half century ago. Provisions concerning deliveries which are currently in effect were approved by a decree of the USSR Council of Ministers in 1981. They have reflected measures envisioned by the July (1979) decree of the CPSU Central Committee and the USSR Council of Ministers concerning improvement of the economic mechanism.

In these and other normative documents, property liability is envisioned in the form of forfeitures calculated in percentages of the value of the products that were not delivered. The amounts of the forfeitures have increased from 2-3 to 10-12 percent during these years. In order to fight against the harmful practice of mutual amnesty, the decree of the USSR Council of Ministers of 1974 established that demanding the forfeiture is not a right,

but an obligation of the parties to the agreement, and that, for unjustifiably refraining from exacting the forfeiture from the supplier state arbitration agencies apply to the purchaser a fine in the amount of 2 percent of the value of the products that were not delivered. Moreover, the responsibility of the supplier is not limited to the payment of the penalty: he is obligated to reimburse the purchaser for losses caused by the delivery failure which are not covered by the penalty.

As we can see, the law has increased liability and prescribed its mandatory application, but mutual amnesty, like interruptions in deliveries, continues.

L. I. Mokeyeva sees one of the reasons for the existing situation in the fact that current legislation allows the same punishment both for insignificant and for significant violations of the agreement. Therefore, after the first delivery failure, the collectives are indifferent to all the rest of the violations. Moreover, all the various positions and deliveries are undifferentiated, although they are not equally significant to the national economy.

Of course the legislation needs improvement, but it is not at fault for all the aforementioned problems. One can easily become convinced of this by looking at points 68, 36 and 104 of Provisions on Product Deliveries. Thus the punishment is applied in the form of a forfeiture in the amount of 8 percent of the value of the products that were not delivered on time, and, consequently, the worse the violation, the greater the sum of the forfeiture.

The quantity of products not delivered by the supplier in one period is made up for in the subsequent period, and the payment of the forfeiture does not relieve the supplier of his responsibility to fulfill his commitments in physical terms. This means, for example, that if in January the supplier failed to deliver products and did not make up for this in the next 11 months, even if he has fulfilled current commitments, he will pay the purchaser forfeitures in the amount of 96 percent (8 percent multiplied by 12 months), that is, almost the full value of the products that were not delivered.

The amount of the forfeiture is increased to 12 percent for failure to deliver products to startup construction sites, to regions of the Far North and certain others where the products can be shipped only at a particular time, and also to enterprises with seasonal production and organizations of the system of the Gossnab and Goskomsel'khoztekhnika (these deliveries are especially important because they supply many consumers), and also for products envisioned by the plans for cooperative deliveries. It is not out of place to add that, according to the provisions, the forfeiture for failure to deliver goods of the children's assortment is doubled. Moreover, state arbitration agencies have been given the right to exact from parties who have grossly violated the agreement sanctions in an amount that is increased by 50 percent, and they take advantage of this right.

If existing legislation needs improvement, it should be made primarily through expanding the bases for applying increased liability.

Among the unsolved problems, L. I. Mokeyeva quite correctly includes also the inadequate application of fines for failure to meet commitments in the amount of the damage that has been caused. Here she has in mind the aforementioned duty of the supplier to reimburse the purchaser for losses (in the amount not covered by the forfeiture) associated with the failure to make delivery.

I should like to discuss one of the factors which is of no small importance in the matter of the poor utilization of the compensatory function of liability.

According to the explanations of the USSR State Arbitration Board, the purchaser, when demanding reimbursement for losses, should substantiate their amounts and prove the cause and effect relationship between the violation of the agreement and the losses that were sustained. One can understand how difficult the position of the purchaser can be when he must convince the supplier or the arbitration board that, among a multitude of factors that influence the results of production, the losses were caused precisely by the delivery failure by the given supplier. It is thought that the cause and effect relationship is lacking if the purchaser, in spite of the failure to deliver raw materials, processed materials and equipment, could have manufactured the product with normed reserves, but did not manufacture it by his own fault. It turns out that the purchaser must also prove that the shortage of supplies as compared to the normative was the fault of the supplier against whom he is making a claim for reimbursement of losses.

The substantiation of the amount of losses also involves no small amount of difficulty, especially if the nondelivery came from not one but several suppliers. In these cases, L. I. Mokeyeva suggests distributing the losses among them in proportion to the value of the products not delivered. Arbitration practice in connection with this question seems more correct. The USSR State Arbitration Board has explained that each of the suppliers bears responsibility to the extent to which his actions contributed to the losses. If their actions caused equal losses, they should be charged to each of the suppliers in equal proportions.

But this is still not all. The supplier is fully or partially relieved of reimbursement for losses if the purchaser has contributed to increasing their amounts or has not taken measures to prevent or reduce losses. True, the supplier must prove this in this case, but the purchaser is forced, during the arbitration process, to expend time and effort on refuting the evidence that is presented. In order to clarify all these circumstances, it is stipulated that the supplier and purchaser should compare primary documents, or experts should be appointed.

It is becoming understandable why the purchasers prefer to obtain from the supplier a guaranteed forfeiture, even if the losses are not fully reimbursed, as long as they do not have to enter into the long and labor-intensive litigation without any assurance of success.

In this connection there arises the question of practical importance concerning the development of methods for substantiating losses. Research conducted jointly by economists and lawyers is a necessary prerequisite for

solving this problem. In our opinion, a successful attempt in this area was made more than 10 years ago by the economics-law division of the Institute of Economics of Industry of the Uzbek SSR Academy of Sciences, who developed as an appendix to the draft of the letter of instruction of the USSR State Arbitration Board (which, unfortunately, was never published) general methods for determining the amount of losses from a violation of commitments by suppliers of products for production and technical purposes.\*

In relation to the need to develop such methods, L. I. Mokeyeva's suggestion about the understanding and composition of losses is interesting. But here one should keep in mind that several of the suggestions she makes have already been realized in normative documents and also in the instructions of the USSR State Arbitration Committee. Now it is a matter of applying them in practice. Thus they stipulate the obligation of the supplier to reimburse the purchaser for expenditures on returning rejected products and on eliminating defects (incidentally, these are not included in the sanctions that are exacted, but are added to them), nonproductive expenditures reflected in the payment by purchasers of sanctions to their contracting parties, and also profit that is not obtained by the purchaser.

#### **Liability of Officials for Failure to Make Deliveries Under Agreements**

The problem of finding effective indicators for evaluating the results of the activity of enterprises is among the most crucial ones. Serious hopes have been placed in the indicator of the volume of products sold. It has been suggested that by paying only for the necessary products, the purchaser becomes an objective judge in evaluating the activity of the supplier and thus the long and justifiably criticized shortcomings of the indicators of the gross and commercial output will be surmounted. But very soon it became clear that the plan for the overall volume of sales can even be overfulfilled and the purchaser can still go without material resources.

From the standpoint of the achievement of the final national economic results, the problem of introducing the indicator of sold products in keeping with the concluded agreement turned out to be so crucial that it was a subject for consideration at the 25th CPSU Congress, in whose resolutions it was written: "To increase the dependency of the amounts of the economic incentive fund and also bonuses for workers, on the fulfillment of deliveries in keeping with the agreements that have been concluded."

In implementing the decisions of the congress, the USSR Gosplan, Gossnab and Central Statistical Administration, in conjunction with the State Committee for Labor and Wages, the USSR Ministry of Finance and the AUCCTU, approved new instructions which went into effect on 1 January 1978. One cannot but note that these instructions were considerably better than the letters that were published, but the establishment of the amount of reduction of bonuses in the

"Vozmeshcheniye ubytkov ot narusheniya obyazatsl'stv postavki produktsii [Reimbursement for Losses from Violation of Commitments to Deliver Products], Donetsk, 1970.

event of underfulfillment of commitments for deliveries was left up to the ministries and departments. The results were not slow in being manifested: in many cases such benefits were established that workers at enterprises that failed to fulfill deliveries by 5 percent and more received almost the full amount of the bonuses.

In keeping with the July (1979) decree of the CPSU Central Committee and the USSR Council of Ministers, the aforementioned union agencies, on 24 August 1981, approved the instructions which are currently in effect, which considerably reduced the amount of the permissible percentage of underfulfillment of commitments for deliveries. But even this time there is no full guarantee that the mechanism for taking away bonuses will produce an effect. The danger lies in accounting for the fulfillment of commitments in terms of deliveries not from the developed products list, as is envisioned by the instructions, but in terms of the groups of products, which distorts the main idea of the legislation on deliveries which is being analyzed: the satisfaction of a specific, and only a specific, need of the purchaser.

How does one explain the fact that undoubtedly effective measures for stimulating the fulfillment of deliveries are being introduced with such agony? There are many reasons, and they will be discussed in the future. Now I should like to draw attention to the fact that we have found that "sore spot" which is affected by the mechanism for stimulating deliveries -- the material liability of officials. For we know that it is more difficult for some managers to pay 10 rubles out of their own pocket than to pay 10,000 rubles out of the pocket of the enterprise.

The responsibility placed on officials is realized, in the first place, through reducing their bonuses when deliveries are not fulfilled, and, in the second place, on the basis of the provisions concerning material liability of workers and employees for damage caused to the enterprise, institution or organization, which were approved by an ukase of the Presidium of the USSR Supreme Soviet of 13 July 1976. The provisions stipulate that managers of enterprises, their deputies and managers of structural subdivisions at enterprises bear material responsibility in the amount of the damage for which they are to blame, but not more than their average monthly earnings. This applies to those cases in which the damage is caused by excess payments, which are the same as forfeitures exacted from the suppliers for failures to make deliveries. Unfortunately, these measures are applied to the aforementioned officials extremely rarely.

An analysis of the practice of utilization of legislation concerning deliveries makes it possible, in our opinion, to draw two main conclusions:

first, it regulates fairly completely the liability both of corporate bodies and officials for failures to make delivery;

second, for a number of objective and subjective reasons, this legislation is not observed in many cases, which considerably reduces its effectiveness as a factor in stimulating the fulfillment of deliveries.

What is happening? One of the main factors consists in the fact that, because of the lack of balance of the plans, there is not the proper coordination between them and the agreements. L. I. Mokeyeva correctly sees the consequences of the lack of balance in the fact that planned assignments turn out not to be reinforced with resources (so-called "air" in the plan). A typical example of the factors and consequences of this shortcoming was presented by Ye. Spiridonov in his article, "How to 'Divide' an Excavator."\* But why do we still not observe the rules for deliveries? Why is the presumed final result eroded away during the course of the fulfillment of the plan, and as a result, instead of technical equipment, the purchaser ends up with separate parts which cannot be assembled? The author of the article answers correctly: because machine builders are frequently given assignments to manufacture a quantity of basic technical equipment for which it is known that they will not have batching items and spare parts. The capabilities of the branch are not accounted for, even in the draft of the plan.

For it is on the basis of these plans that the supplier is obligated to conclude agreements with the consumers and to bear responsibility for failure to fulfill them. It is not difficult to understand the psychological condition of a manager of an enterprise who has not been allotted the resources necessary for fulfilling the plan, or has been assigned suppliers who are known to be unreliable. He does not experience any guilt at all. Not without reason, he considers the reasons for failure to fulfill the production plan, and, consequently, the delivery plan as well, to be objective, but he must pay the fine for the incomplete deliveries and forfeit his bonus.

Apparently, in a number of cases this explains the bad practice of mutual amnesty: the manager of the purchasing enterprises will not sign a legal claim for exacting a penalty from this supplier. The more so since this manager himself frequently ends up in a similar situation with respect to his purchasers and he cannot but sympathize with his colleague. The suppliers, of course, do not remain silent; they enter into lively correspondence with the higher organizations, and frequently manage to have the plan reduced.

L. I. Mokeyeva thinks that stopping such adjustments of the plan will increase the demand from central planning and supply agencies, for the enterprises will not put up with unbalanced plans. But the problem is that the legal mechanism for the enterprises' influence not only on these agencies, but also their own ministries and departments which set the planning assignments, is still weak.

It is difficult to find a normative document devoted to problems of improving the economic mechanism which does not contain instructions to provide for plan balance. Recent normative documents include the CPSU Central Committee and the USSR Council of Ministers decree on meeting contractual commitments for product deliveries and increasing the responsibility in this matter of the ministries, departments and enterprises,\*\* which suggests that the USSR Gosplan and the USSR Gosnab take additional measures to improve the balance between the production volumes and the material and technical resources. In

\*IZVESTIYA 2 April 1982

\*\* PRAVDA 16 April 1982

this connection, suggestions made by legal science are interesting. As early as 1975, T. Ye. Abova, for example, in a monograph with the remarkable title "Protecting the Economic Rights of Enterprises," suggested submitting for the consideration of state arbitration agencies disputes between enterprises and their higher agencies concerning violations of planning legislation by the latter, particularly the establishment of unbalanced planning assignments. Objections to this suggestion can frequently be reduced to the fact that the enterprises will be "afraid" of complaining about their superiors. In this connection, the argument put forth by T. Ye. Abova is convincing: in almost every issue of EKONOMICHESKAYA GAZETA there are articles by managers of enterprises which contain serious criticism against higher management and other administrative agencies, and there are also responses about measures that have been taken.

Supply enterprises have acquired certain possibilities regarding this. In keeping with Article 19 of the law "On the USSR State Arbitration Board," arbitration agencies have the right to refuse to satisfy the demands of the parties if these demands are based on a document of a state administrative agency which does not correspond to existing legislation. Hence it follows that the supplier can be freed from concluding agreements and paying fines for failure to deliver products under the agreement if he has been given an unbalanced plan in violation of the law. But, in the first place, arbitration agencies have not been noticeably taking advantage of this right, and, in the second place, only the interests of the supplier will be protected, and the consumer will be in an even worse position than he was before: he will go without the material resources necessary for fulfillment of the plan, and without the forfeitures intended for reimbursement of the losses caused by the failure to deliver products.

The consumer ends up in a similar situation when the suppliers are not required to pay forfeitures for failure to deliver products. Incidentally, the fact that this practice has become widespread in recent years is also a consequence of a lack of balance: most frequently the supplier is relieved of responsibility precisely because his production plan was not supported with material resources.

From all that has been said, one comes to the conclusion that the economic and legal problem of increasing the effectiveness of the indicator for evaluating the work of enterprises, taking into account the fulfillment of agreements, should be solved through achieving scientifically substantiated balance of the plans and improvement of the legal mechanism which would guarantee this. It seems that the aforementioned conditions constitute one of the most important prerequisites for increasing the responsibility for failure to make deliveries in keeping with agreements.

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KHEYNMAN, "AVTOZIL" OFFICIAL RESPOND TO ARTICLE ON PRODUCTION INTENSIFICATION

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian  
No 10, Oct 83 pp 144-148

[Article by A. I. Buzhinskiy, deputy general director of AvtoZIL Production Association, and S. A. Kheynman, doctor of economic sciences, sector chief of Institute of Economics of the USSR Academy of Sciences (Moscow), in response to article by K. K. Val'tukh, "The Investment Complex and Production Intensification," published in EKO, No 3, 1982: "On Intensification and Investments"]

[Text] Among the materials on problems of the investment complex, last year there was an article entitled "The Investment Complex and Production Intensification." According to its author, Professor K. K. Val'tukh, "by now we have significantly exhausted the potential effectiveness of the previously created production apparatus, and its as yet unutilized reserves cannot serve as a basis for solving the strategic problems in economic development." And further: "By the beginning of the 10th Five-Year Plan the capabilities of the previously created production apparatus were utilized to a significant degree." He draws a conclusion about the need to "step up investment activity and increase production capacities" or, simply speaking, to accelerate the growth of capital investments. K. K. Val'tukh thinks that such a policy is the "basis of intensification."

It seems that the article does not quite correctly orient the readers with respect to the extremely crucial question of ways of intensification and sources of economic growth. There is no doubt that investments and capital investments play an important role in the process of expanding reproduction. Capital investments in the country's national economy are regularly increasing: under the 10th Five-Year Plan they increased by 32 percent, and during the years of the 11th Five-Year Plan they are increasing by another 10 percent.

The volume of capital investments is great: in 1976-1980 -- 630 billion rubles, and during 1981-1985 it will exceed 700 billion. During the 10 years capital investments will have amounted to 1,330 billion rubles. For comparison: at the end of 1981 fixed capital in the national economy was valued at 1,852 billion rubles.

Of course, one should only welcome the possibility of further expanding capital investments without damaging the consumption fund in the national economy. But the viewpoint, according to which the possibilities of the existing production and scientific-technical potential related to improvement of the organization of public production and mobilization of structural reserves are exhausted, is erroneous. It seems that this position -- increasing investments as a basis for intensification -- should also be criticized because it will have many proponents, thus leading economists and management workers away from the main line of intensification of the economy.

This is shown, in particular, by these facts. For the 1982 plan the ministries and departments submitted orders for 2,000 new construction projects with estimated capital expenditures of more than 3 million rubles each. USSR Gosplan divisions left 600 projects on the list, and 385 of them were finally included in the plan.\*

In the accountability report of the CPSU Central Committee to the 26th Congress, the section entitled "Utilizing Production Potential More Completely and Effectively" says: "We, comrades, are now able to solve the largest and most complicated problems. But the pivotal point of the economic policy will be something that would seem simple and very ordinary -- an economical attitude toward public wealth, the ability to utilize everything we have completely and efficiently. The technical policy, the policy for capital investments and the system of planning and reporting indicators should be directed toward this."\*\*

Major attention here has been devoted to improving the utilization of production capacities -- machines, equipment, means of transportation. A reduction of idle time and an increased coefficient of shift work -- here is where we should concentrate our efforts.

What are the facts? Are the potential capabilities exhausted, is their justification for counting on existing reserves.

Let us take the key branch of the investment complex -- machine building. These figures were presented on the pages of EKO: about 44 percent of the metal processing equipment is outside of machine building and metal processing and is operated on 0.3-0.5 shifts (2.5 - 4 hours a day), and the coefficient of shift work in machine building is 1.3 - 1.4. Can such a stockpile, which exceeds total stock of equipment in the United States, Japan and the FRG, not make a contribution to solving the problem of the development of the Soviet economy?

Does "strengthening investment activity" justify accelerated removal of machines and equipment in agriculture which, in the opinion of K. K. Val'tukh,

\*N. Baryshnikov, G. Golakhov, "Capital Construction -- a Decisive Part of Socialist Reproduction," PLANOVYE KHOZYAYSTVO, No 3, 1982.

\*\*"Materialy XXVI s"yezda KPSS" [Materials of the 26th CPSU Congress], Moscow, Politizdat, 1981, p 42.

is explained as an "echo of the rapid startup of capacities in the past"? The essence of the matter lies to a significant degree in the poor quality of the technical equipment, the incomplete sets of it, the lack of storage facilities, and unskillful utilization of it.

In our opinion, one cannot assert that "the basis of intensification can be only increased investment activity" and not speak about the losses of means of production and objects of consumption in various stages of the production process which, as we know from figures in the press, have reached significant amounts. It would hardly be correct to cover losses with a further increase in resources: such a policy is the opposite of intensification.

It is useless to look in the article "The Investment Complex and Production Intensification" for an analysis of specialization, concentration and the utilization of capacities of the construction industry. The situation here is extremely bad, but K. K. Val'tukh does not discuss this.

Organizational factors in economic growth were not discussed in the article: improvement of the utilization of production capacities as a result of improvement of production organization at individual enterprises and at the branch level. It is widely known that, for instance, smelting, forging-pressing and stamping equipment is inadequately utilized because of poor production specialization, the existence of a multitude of extremely small smelting and forging shops, and so forth.

On the pages of EKO they have discussed the immense amounts of essentially "surplus" equipment that result from "naturalization" of business: innumerable mechanics shops and sections of "their own" with millions of units of metal processing equipment, "their own" sawmills, where more than 70 percent of the milling work is done (even at machine tool building plants) with tens of thousands of saws and other technical equipment which is utilized insignificantly; tens of thousands of "their own" mini-garages, where the fleet of motor vehicles is concentrated, which handles more than 70 percent of all the cargo shipments and is equipment with all kinds of garage equipment which basically stands idle. Finally, there are tens of thousands of construction organizations -- 31,700 contracting organizations (and how many of "their own" which work by the "direct labor method"?), which are equipped with construction mechanisms which stand idle for a good part of the year.

In view of this situation, is it correct to speak about the exhausted possibilities of the previously created production apparatus or about the insignificance of its reserves?

In the struggle for "stepping up investment activity" K. K. Val'tukh writes exclusively about increasing production capacities, about "expanding capacities." But, after all, this is the extensive and not the intensive path of development. And in fact there is a need to considerably accelerate the process of removal and replacement of outdated elements of fixed production capital.

Great possibilities of increasing effectiveness lie in improving the structure of investments in keeping with the course toward intensification of industrial production. Accelerated development of branches that provide for preserving the social product created with available capacities, in essence, acts as a factor in its real growth. We are speaking of developing the production infrastructure, including service branches for agricultural production.

Comprehensive mechanization and accelerated introduction of scientific and technical achievements and principally new technologies will undoubtedly serve as one of the key conditions for intensification of production. But these measures are certainly not necessarily accompanied by a considerable acceleration of the growth of industrial capital investments.

In his article K. K. Val'tukh asserts that measures for increasing labor productivity that do not involve expansion of production capacities can lead only to a reduction of the number of employed personnel. Yet the servicing of more than one machine tool, improvement of the organization of production and labor, and more complete utilization of raw and processed materials -- everything which is called intensification -- contribute to increasing output and labor productivity, to increasing the return from each unit of capacities, and without "releasing workers." When the author's attention is concentrated on the subject of increasing investments, a good deal that is important lies beyond his field of vision.

It seems to us that the main task consists in finding expedient paths of intensification and actively searching for means of complete and effective utilization of the production potential that has been created, and improving the production structure, of course, with its further growth in keeping with the balanced plans for the development of the Soviet economy.

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## ACADEMY ECONOMIST CRITIQUES SHATALIN'S BOOK ON ECONOMICS OF SOCIALISM

Novosibirsk EKONOMIKA I ORGANIZATSIIA PROMYSHLENNOGO PROIZVODSTVA in Russian  
No 10, Oct 83 pp 169-179

Review by D. M. Kazakevich, doctor of economic sciences, professor, Institute of Economics and Organization of Industrial Production of the Siberian Branch of the USSR Academy of Sciences (Novosibirsk), of the book "Funktsionirovaniye ekonomiki razvitoogo sotsializma. Teoriya, metody i problemy" [The Functioning of the Economy of Developed Socialism. Theory, Methods and Problems] by S. S. Shatalin, Izd-vo Moskovskogo universiteta, 1982, 384 pages]

[Text] The June (1983) Plenum of the CPSU Central Committee set for economic sciences the task of providing for a new and considerably higher level of theoretical research, having noted that "especially crucial are such problems as stimulating scientific and technical progress, improving the system of administration and planning, providing for the priority of nationwide and state interests, and improving distribution relations and the principles of scientifically substantiated price setting." The decision of the Plenum determined for the long-range period the main criteria for selecting the crucial directions in economic research and evaluation of scientific works.

Appearing in the flow of new economic literature are many good and useful works of a theoretical-propagandistic and applied nature. But, unfortunately, there are not so many monographs that advance one area of fundamental research or another. The new book by the corresponding member of the USSR Academy of Sciences, S. S. Shatalin, is precisely one of these works. While addressing theoretical problems, it also contains a number of practical suggestions for improving planned administration of the socialist economy. The book is of interest both to political economists and to specialists in the area of national economic planning and administration of the socialist economy.

### Economic Laws of Socialism and Criteria for the Optimum

The monograph is devoted to further development of the theory of optimal functioning of the socialist economy. The author regards the socialist economy as a deliberately optimized system. And the optimum, achieved in a planned way, is understood as an objective, immanent, universal form of movement of socialist production relations.

Based on this main point, the author considers it necessary to clarify the understanding of the objectivity of economic laws of socialism. He expresses his disagreement with the widespread understanding of the objectivity of economic laws of socialism as their independence of the will and awareness of people. This indicator is adequate for economic formulas that are based on private property, for describing laws that are realized in random form. The specific feature of the objective economic laws of socialism consists in the need for conscious embodiment of their requirements, in planned control of economic development: "the objective nature of the laws for the functioning of a socialist economy includes the need for their deliberate utilization in the interests of the entire society" (p 87).

In his book S. S. Shatalin considers in detail the various conceptions of national economic criteria for the optimum:

minimum expenditures of public labor with a given volume and structure of the final social product (national income) or fund for satisfying the nonindustrial needs of the society;

maximum physical volume of the national income;

maximum integral social usefulness of consumer goods and services, that is, maximization of the integral fund for satisfaction of the needs of members of the society.

The author substantiates the correctness of only the last of these criteria. He convincingly criticizes the concept of maximizing the physical volume of national income, which is accepted in the methods of national economic planning. The selection of the national economic criterion of the optimum is dictated by the goal of public production, as determined by the basic economic law of socialism. But national income characterizes not only the objective goal of the development of the socialist economy, but also the means for its achievement. The author says that maximizing them is economically inefficient.

A socialist society is interested not in maximum growth of production accumulation and, on this basis, the greatest growth rates of the national income, but in an optimal combination of accumulation and consumption, or, which is the same thing, an optimal combination of the interests of current and future consumption. The solution to the problem is not the highest, but optimal growth rates of the national income. Then one achieves an optimal ratio between the satisfaction of current nonindustrial needs of the socialist society and expansion of production, whose goal is to improve the well-being of the population in the future.

Maximization of the physical volume of the national income with its given structure is also unacceptable. The utilization of such a criterion removes the problem of determining, during the course of optimization of the plan, the best ratio between consumption and accumulation. This means that the most

important proportion of national economic development, which determines to a decisive degree the physical-substantial structure of the national income, becomes a priori with respect to the optimal plan.

In his book S. S. Shatalin develops and defends the concept of optimization of the national economic plan in terms of the criterion of dynamic maximization of the integrated fund for satisfying the needs of members of the society or, which is the same thing, in terms of the criterion of dynamic maximization of the function of the social usefulness of consumer goods and services. Here the maximized fund cannot be expressed only in terms of the consumption fund which is created by branches of material production and is a part of the national income (with the present -- incorrect, in the author's opinion -- understanding of the sphere of material production and the existing methodology for calculating the national income). In the author's opinion, the maximized fund includes services to the population that are not included in the national income and are offered by the nonindustrial sphere.

Thus optimization of the national economic plan according to this criterion should also determine the optimal rates of economic growth for a specifically considered future period, the optimal ratio between production and consumption in the national income, and other most important proportions in the process of reproduction.

It should be noted that the author is not altogether precise in his critique and evaluation of the idea of V. V. Novozhilov concerning the criterion of minimization of expenditures of public labor. One cannot consider this criterion to be fully removed from the criterion of maximization of social usefulness and contradictory to the objective goal of socialist production. This would be the case if we were talking about a unique calculation with the criterion of minimization of expenditures of public labor. But V. V. Novozhilov thought\* -- that the national economic optimum could be determined approximately in the multistep iterative process of calculating the national economic plan. As a criterion for the optimum one uses the minimum expenditures of public labor for obtaining the social product, and the limitations are the given volumes of production (for example, resources of consumption as part of the national income. -- D.K.). At each subsequent step of the iterative calculations we move to a new, higher level of production, but the criteria for the optimum remain the same. The iterative process culminates with obtaining a variant of the plan which fully utilizes the limited resources in the national economy for the future period under consideration. These can be the resources of the society and the irreplaceable natural resources predicted for economic utilization.

\*Beginning with the first publication which touched upon this question. See: Novozhilov, V. V., "Debatable Questions of Applying the Method of Auxiliary Factors in the Socialist Economy" in the book: "Ekonomiko-matematicheskiye metody" [Economic-Mathematical Methods], Moscow, Izd-vo AN SSSR, 1963, Ed. 1, pp 138-139.

The proof of A. G. Aganbegyan and K. A. Bagrinovskiy of the theorem of the reciprocity of the tasks of minimization of expenditures of public labor and maximization of the effect of public production with a limitation on labor resources\* confirmed how realistic and fruitful V. V. Novozhilov's ideas are. It became clear that the aforementioned statement of the task and the multistep procedure of optimization of the national economic plan make it possible to approach, using the criterion of minimization of expenditures of public labor, the variant of the plan that is equivalent to the variant of the plan which would be obtained with maximization of the satisfaction of public needs with given labor resources.

The profound and interesting analysis of the criterion for the optimum in S. S. Shatalin's book has, in our opinion, the shortcoming that the author does not try to extend it to recommendations for the present day, when we still do not have an all-embracing system of optimal planning of the national economy and we are still far from having real possibilities of utilizing at the level of consolidated national economic planning the criterion for maximization of the function of socially useful consumer goods and services. In the book we do not find any kind of critique of approximate approaches which are already being applied at the present time, or ways of improving them. The author limits himself to substantiating the criterion, which will be possible only in the future, and he criticizes suggestions about all others, including those intended for application today, because of the impossibility of the ideal. It seems that it is wrong to refrain from analyzing criteria that are applicable in practice, and the book would have benefited from such an analysis.

The multistep approximation procedure for consolidated national economic planning can be regarded as a palliative solution to the problem of the criterion for the present day. In particular, the following approach is possible. One preliminarily develops ranked groups of goods, which form the resources for consumption by the population (fund of current consumption by the population and fund of nonindustrial accumulation) in the long-range period under consideration, broken down into individual sections (posing the problem dynamically). As a criterion for the optimal solution to the problem one uses the achievement of the highest rank of the group. The conditions (limitations) of the problem include:

control of interbranch ties for reimbursement of material production expenditures;

balance limitations for the utilization of the part of the output that forms elements of fixed production capital;

limitations on irreplaceable natural resources, and so forth.

limitations on labor resources of the national economy in the cross section of the singled out segments of the future period;

\*See: Aganbegyan, A. G., Bagrinovskiy, K. A., Granberg, A. G, "Sistema modeley narodnokhozyaystvennogo planirovaniya" [A System of Model of National Economic Planning], Moscow, Mysl', 1972, pp 101-123; 130-136.

## Criterion of the Optimum and Final National Economic Results

In the opinion of S. S. Shatalin, the global criterion of dynamic maximization of the social usefulness of the entire totality of socio-economic goods means maximization of the final national economic results of the development of the socialist economy during the course of the long-range period under consideration (including not only material production, but also the nonindustrial sphere). In this connection, the book subjects to critical analysis existing ideas that include the global social product, the final product or the national income among final national economic results. The way the author makes these categories precise is also interesting.

Economic theory has still not overcome the view, according to which the global social product is the annual product of the society which reflects the final result of public production. In the opinion of S. S. Shatalin, this role is played by the final social product, which has not yet taken its place in planning and statistics concerning the results of production. "It is precisely the final social product, completely free of repeated accounting for value through transferred (production capital) and newly created (live labor) primary production resources, conditioned by the circulation of production capital among individual autonomously financed socialist enterprises during the year, that is the real total result of the process of social reproduction and the annual social product"(p 96).

The author presents the following ratios among the global social product, the final product, and their parts:

$$\begin{aligned} X &= W + Y; \\ Y &= R + D; \\ D &= C + I + E - M \end{aligned}$$

The final social product Y is a part of the global social product X minus the intermediate product W. From the standpoint of the functional-economic structure, it consists of two parts:

R -- the fund for replacement of means of production accumulated by the beginning of the annual reproduction cycle and consumed within it;

D -- the net social product (national income), which includes nonindustrial consumption and accumulation C, the fund of industrial accumulation I, and the export-import balance (E - M).

The final social product characterizes the volume of output produced by all units of the system of social division of labor, which finally goes beyond the limits of annual current production.

In our opinion, the author comes to valuable conclusions after considering the systems of expanded reproduction of K. Marx and V. I. Lenin, taking into account the analysis of the movement of the final social product in the physical-substantial and value forms. In particular, the book gives an extremely convincing argument for the conclusion that the value transferred

from accumulated production funds should be defined as the reproduction value. In keeping with this, recommendations are given for statistics and the system of national economic planning.

#### Rates and Proportions of Social Reproduction

S. S. Shatalin's book criticizes methodological approaches to planning the rates and proportions of socialist reproduction which are widespread in economic literature and orient planning practice incorrectly:

the separation of the analysis of the rates and proportions of economic growth from problems of optimal functioning of the economy as a whole and the economic effectiveness of public production;

attempts to make universal laws out of the conditions for reproduction that are typical of a particular level or stage in economic development;

the formulation of a priori simple laws which are supposed to govern the proportions of social reproduction in all cases.

The authors of the works that are being criticized are not very bothered by the fact that there is an obvious contradiction between the theoretically formulated laws of the formation of the rates and proportions of the development of the socialist economy and the actual, real tendencies and problems of the current stage of the country's economic growth. One cannot but agree with S. S. Shatalin's assertion that the national economic plan "cannot serve only as a quantitative illustration of the manifestation of the profound laws of the formation of rates and proportions of economic growth, which are qualitatively revealed outside the purview of the socialist economy as a system that is optimized in a planned way" (p 90).

Many economists assume that there are laws for the formation of rates and proportions which are a priori with respect to the concrete plan, and which are established theoretically. These include a priori ideas about ratio between the growth rates of subdivisions I and II of public production (the law of priority growth of the production of means of production), about the increased proportion of expenditures of embodied labor in the total social expenditures on the production of products as a result of technical progress, and so forth. S. S. Shatalin has conducted an analysis of the entire totality of interconnections between expanded reproduction and factors that exert an influence on the formation of its most important proportions in each concrete period which is encompassed by the national economic plan. He has analyzed in detail, in particular, the conditions and factors on which the ratio between the growth rates of subdivisions I and II of public production depend. This is the first time in our literature that such a profound, complete and convincing scientific analysis has been presented. The author has come to the conclusion that there are no a priori laws like the ones mentioned above, which are supposed to be in effect in any economic situation.

From the analysis conducted in the book, it is quite clear under which specific (for a particular period) conditions of reproduction and with which

type of technical progress the aforementioned dynamics of the two subdivisions and a change in the proportions of embodied and live labor in labor expenditures are actually necessary and when they are not. But it would also be wrong to formulate a law of priority growth of subdivision II or a law of identical growth rates of the two subdivisions. Specific proportions of the process of reproduction, including the ratio of the growth rates of subdivisions I and II, arise only from the specific conditions of the period and are determined by the optimal plan for the development of the socialist national economy for the given period. These proportions are derived from the criterion for the optimal development of the socialist economy, the quantity of available material, labor and natural resources of the society, the level of its scientific and technical knowledge and the nature of technical progress in one period or another. They also depend on factors of the country's foreign political and foreign economic development.

The reader of the book also comes to the conclusion that it is necessary to abandon the widespread opinion that there are certain set laws of the dynamics of the capital-output ratio in public production, of the proportion of the reimbursement fund in the social product, and the proportion of production accumulation in the national income. S. S. Shatalin writes that increased effectiveness of public production can be accompanied by higher, lower, or stable proportions of the fund for reimbursement of expended production capital in the physical volume of the social product. Neither an increase nor a decline in the proportion of the reimbursement fund in the social product is a law of economic development which is realized on an intensive basis. Optimal utilization of material, labor and natural resources can be achieved, depending on the nature of scientific and technical progress, the relative shortage of resources, a change in the structure of demands, and so forth, with an increasing, decreasing or stable proportion of production accumulation in the national income (pp 176-177).

If there are no set laws, what can one use as a basis for the economic policy when developing the plan? The author is consistent to the end in answering this question. It is necessary to have an optimal long-range national economic plan. And it will reveal all the concrete proportions of reproduction in the planning period that is being considered. And the book presents in detail the author's concept of the optimal plan and his methodology for developing it.

#### Optimal Planning and Value Categories

The author of the book includes among the constitutive indicators of socialism the hierarchical nature of the socialist economic system. Centralized planned management of the economy on the scale of the entire society is combined with relative economic independence of its individual production units. Thus the effectiveness of the economic mechanism for the functioning of the socialist economy depends on the coordination of social and national economic interests, and the global criterion of the optimum for the functioning of the socialist economy, with local economic interests and local criteria for judging the optimum of the economic activity of production units of the national economy which carry out the production process on the basis of autonomous financing.

A large amount of space in the book is devoted to the problem of organically combining centralized planning of the national economy and operational-economic independence of individual autonomously financed production units. And prices are at the center of the author's attention in this connection. Among developers of the theory of optimal functioning of the socialist economy there are no differences of opinion about the connection between prices and the optimal plan. The impossibility of correctly forming price relations outside the mechanism for optimal functioning of the economy is just as obvious as the aforementioned unproductivity of attempts to establish scientifically substantiated proportions in the development of the national economy outside its optimal plan. In a socialist economy prices should be determined during the course of the development of the plan itself, and they depend on the criterion for optimal development of the economy and on the limitations of the period for the utilization of material, labor and natural resources and other conditions.

We know of criticism of optimal prices as prices that are somehow separate from socially necessary expenditures, which reflect only usefulness. But here the most resolute critics interpret usefulness itself in the spirit of the bourgeois theory of extreme usefulness, and not in the Marxist theory of social usefulness of goods, attributing the first interpretation of usefulness to proponents of optimal prices in the socialist economy. S. S. Shatalin consistently reveals the mechanism for the formation of prices of the optimal plan. He draws the reader to the conclusion that the prices of products obtained during the course of the development of the optimal plan are determined by the following:

their social usefulness;

expenditures on the production of products in the optimal national economic plan, acting not as average (the widespread understanding of expenditures), but as growth and extreme expenditures. In this case the price of the product reflects the correspondence between its social usefulness and socially necessary expenditures of labor (ONZT) on its production in the optimal plan.

#### Commercial Production and Conformity to the Plan

But not all of the proponents of the prices of the optimal plan have the same understanding of the connection between prices and value relations. S. S. Shatalin criticizes the thesis shared by no small number, if not the majority of specialists in the area of optimal planning: the theory of the optimal price is directly related to the Marxist theory of value and is a further development of it with respect to the conditions of socialism, based on the goal of socialist production. And under socialism the optimal price is the monetary expression of value. S. S. Shatalin considers it unproved that "socially necessary labor expenditures acquire the definiteness of the economic form of value under the conditions of socialism" (p 62). In his opinion, the law of value as the law of formation of prices under socialism gives way to "the law of price formation on the basis of social usefulness" (p 82). According to this idea, the basis of prices is social usefulness, that is, the contribution made by a small, differential increase in resources and

products to the increase in the value of the global criterion of the optimum -- the maximum integral value of the function of the social usefulness of consumer goods. Additionally, it is thought that the significance of the category of the ONZT remains. The author emphasizes defining prices not separately, but on the basis of socially necessary labor expenditures, since "under the conditions of optimal utilization of production resources, social usefulness is equal to socially necessary labor expenditures on the production of products (p 62).

The denial of the role of the law of value, the law of commercial production, is no accident in S. S. Shatalin's concept, since, in his opinion, the socialist economy retains mainly commodity-monetary forms and not real commodity production. It says in the book that it is incorrect to assert that socialist enterprises are commodity producers, and all production capital that comes in for exchange and is sold through merchant sales as well as consumer goods are essentially commodities. In essence, commodities are not that part of the gross output of current production whose volume and structure are determined in the national economic plan, the part that is sold at centrally planned firm prices of the state national economic plan.

The author considers one of the most important points in the political economy of socialism to be the one "about the mutual exclusivity of adherence to the plan, as the overall form of development of socialist production relations, and commercial relations, as the historical form of random regulation of public production" (p 242). In his opinion, the same production relations cannot be planned and commercial at the same time. To the degree to which socialist production relations are planned, they cease to be commercial. Expansion of the sphere of commercial relations narrows the area of planned relations and vice versa, since they exist in the same field of socialist production relations. Price relations, or commercial-monetary forms, which exist outside relations of commercial production, act under socialism as an element in adherence to plans, an instrument for the development and implementation of the centralized plan for the development of the national economy. They act as a means of realizing the multilevel structure of the economy, of combining centralized planning and relative economic independence of the production units of the society, the coordination of the global, national economic criterion of the optimal economy with local criteria of optimal management of its individual units, nationwide and local economic interests.

S.S. Shatalin completes his analysis of the problem of commercial relations with the conclusion that from the objective fact of economic independence, the separation of individual production units of the socialist economy and the possibility of their adopting economic decisions which are not conditioned directly by the national economic plan (adherence to the plan), there arises the need and possibility of retaining elements of commercial-monetary relations under socialism. But the more fully the society assimilates the law of planned, proportional development of the national economy, the less space, consequently, remains for commercial relations, since planning, which reflects the activity of the society as a whole, is the antipode of commercial relations which embody the randomness of the regulation of public production.

While giving its due to the consistency of the position of the author of the book under consideration, which is shared, incidentally, by no small number of political economists, we still think it correct to recognize the reality of commercial relations and the objective law of value in the socialist economy, but the socialist type of commercial relations, which do not contradict adherence to the plan, and the law of value which acts as an element of the system of economic laws of socialism. The social usefulness of goods (regulated by the basic economic law of socialism) acts as a most important factor in the formation of socially necessary expenditures on their production and their social value. Planned commercial-monetary relations mean, in particular, that the optimal plan reveals the socially necessary level of labor expenditures which determine the value of goods and their prices. The ONZT takes form as a result of weighing the increase in social usefulness in connection with the acquisition of the given goods and the national economic expenditures of embodied and live labor involved in their production.

It does not follow from this that value is determined by the plan itself. It is objectively formed in the national economy in the real activity for implementation of the national economic plan. But the peculiarity of planned commercial-monetary relations and planned utilization of the law of value consists in the fact that the optimal national economic plan exerts a decisive influence on the process of the formation of the social value of goods in the national economy. It is precisely the plan that determines the most important proportions of reproduction and establishes the optimal level of prices which approach the anticipated socially necessary expenditures on the production of goods.

The very idea of the possibility of the existence, along with prices that reflect commercial relations, of new price relations of a noncommercial nature seems constructive to us, but not from the standpoint of the present economy, but of the future economy when commercial relations will have died out. It would hardly be correct to look at the present economic mechanism mainly through the prism of noncommercial value relations which are predicted for the future and commercial relations which exist in our economy, to regard as not completely eliminated the element of presocialist relations, which are disappearing as planning in the national economy increases. If noncommercial value relations replace commercial ones in the future, it will be only in a developed communist society, after commercial relations, which are organically inherent in socialism as the first phase of the communist formation, have been completely developed and have exhausted themselves.

For the present period, in our opinion, it is extremely crucial to limit elements of random commercial-monetary relations, of the randomness of the manifestation of the law of value with its negative consequences for the national economy, and to assimilate more completely planned socialist commercial-monetary relations in the interests of the development and fuller utilization of economic methods in the management of the socialist national economy which, in our opinion, is one of the most important conditions for a fundamental increase in the effectiveness of public production.

In addition to what was mentioned above. S. S. Shatalin's book considers a broad group of important issues. He presents a very good argument, for example, for the idea that resources used for solving problems related to raising the standard of living of the population are not only a material embodiment of the final results and the goal of the development of the socialist economy, but also an important means of increasing its balance and effectiveness. They are an important "production" factor in providing for high and stable rates of economic growth. Interest is aroused by the author's disclosure of the concept of the rational demands and components that characterize the level of public well-being, which are subject to analysis and accounting in the national economic planning. The author's suggestions for improving wages and their distribution through public consumption funds are interesting. Attention should be given to one of the first attempts in our literature to substantiate theoretically the essence of the country's unified national economic plan.

S. S. Shatalin's new book is the result of creative analysis of the process of the functioning of the modern socialist economy. Economic science has been enriched with a pithy and profound theoretical work which is oriented toward solving large long-term problems related to improving economic practice.

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## LACK OF INTEREST IN LABOR CONFERENCE DEPLORED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian  
No 10, Oct 83 pp 180-183

[Article by Ye. P. Kutyrev, candidate of economic sciences (Novosibirsk), on the scientific and practical conference "Socio-Economic Factors in Increasing the Effectiveness of the Brigade Form of Organization and Payment for Labor" in Chelyabinsk, 10-11 November 1982: "How to Disseminate Brigade Organization"]

[Text] There were many subjects which interested the hundreds of people who gathered at the scientific and practical conference. Among them was the brigade form of organization and incentives for labor. But why did the participants in the conference in Chelyabinsk fill only one-third of the hall? Let us briefly exchange opinions on this with the organizers -- workers of the Uralsk House of Scientific and Technical Propaganda and scientists from Chelyabinsk State University. We shall state: the case is symptomatic and it bears witness to the decreased interest in the subject. On the one hand, those who at one time engaged in brigade organization purely by accident have fallen away. On the other hand, many think that they have nothing to learn, that their own experience is enough.

What is the real situation with respect to the dissemination of the brigade form of organization and incentives for labor? Is it really true that everything is clear and there is nothing to learn? The conference confirmed that the answer is not so simple.

The paper by the sector chief of the Scientific Research Institute of Labor of the USSR State Committee for Labor and Wages, Candidate of Economic Sciences V. I. Veslomtsev, helps to convince us of this. The institute has at its disposal data concerning how many workers have been included in brigades and what type, in which branches of industry they are being introduced, what advantages brigade organization has over individual organization, how many brigades distribute wages according to the KTU and what types of KTU's are applied, and so forth. As the speaker showed, we have passed through the stage of preparation of methods, created an organizational and legal base, introduced statewide statistical accounting, and drawn up plans for scientific organization of labor for the five-year plan. In a word, the preparations are complete, and the time has come to change over to extensive dissemination.

Here, however, the speaker gave facts and figures which cause one to think. It turns out that as a result of introducing brigades, the labor productivity of industrial workers increased by 1.7 percent during the first year and a half of the five-year plan, while according to the plan the increase was to have been 2.8 percent. Conversely, the plan for "inclusion," that is, the enlistment of workers in brigades, was considerably overfulfilled. Consequently, the experience of past innovations, such as including working positions in plans for scientific organization of labor, the movement of shock workers and brigades of communist labor, was not fully taken into account. If there are more people in brigades, this does not mean that the goals pursued by the introduction of brigade organization have been attained: increasing labor productivity, inculcating collectivism, strengthening discipline, and so forth. Moreover, as V. I. Vezlomtsev emphasized, it is possible to report to the higher organizations the numbers and those who are included, and conceal a good cause behind plain old formalism.

As has happened before, the logic ends up inverted. Something undoubtedly useful is recommended and introduced, and a result is expected, but this expectation is frustrated. This is not surprising, since in these cases the innovation acts as a goal in itself. Yet it should be a means of increasing labor productivity, improving the moral and psychological climate, and so forth. If the tasks are large and the demand for their fulfillment is strict, the executors themselves turn to advanced, progressive management methods. This was the recurring theme of many of the speeches at the conference.

Where are we now with respect to the brigade form of organization and incentives for labor? Undoubtedly, the ship of "brigadization" has travelled half the distance. For example, much has been resolved and achieved in the Chelyabinsk Tractor Plant imeni V. I. Lenin association, which was discussed by the chief of the OOTiZ, Candidate of Economic Sciences B. N. Artem'yev, and his deputy, L. V. Stepanov. It is no wonder that at the "round table" discussion held at the conference they were asked many specific questions. The speech of the chairman of the association's brigade council, A. A. Rychikhin, was interesting. He discussed the education of people by means of brigade organization of their labor. Having worked with one brigade and accumulated experience, A. A. Rychikhin undertook to raise up the rest of the section. And he managed to create a real collective in the new brigade. From his speech, which all participants in the conference could identify with, there followed at least two conclusions. First, the effect from introducing brigades can frequently be felt only at the very beginning, and then it should be further developed, but scientific thought and the experience of practical workers frequently do not reach this point. Second, it is not always possible to agree with the work principles of the brigade leader, but there is nobody to suggest this. The party and trade union organizations as well as the administration end up essentially on the sidelines. And they cannot help because they do not have appropriate methods at their disposal. 1101

A large mass of experience has been accumulated in brigade organization. To be convinced of this it was sufficient to hear the speeches of the chief of the bureau for brigade forms of the Ufa Motor Construction Production Association, A. M. Shchelchikov, the chief of the OTiZ of the Chelyabinsk Siluet Sewing Association, L. V. Bespalova, the leader of the group for

scientific organization of labor of the Chelyabinsk Teplopridor plant, G. Yu. Mernig, and others. One change is remarkable: previously, participants in the conferences wanted to hear more from brigade leaders, while today more attention is devoted to managers of labor services -- OOTiZ and ONOT; consequently, the level of generalization of experience is rising.

Attention should also be given to another aspect of this fact: generalization proceeds intuitively, on the basis of concrete experience. The method of trial and error is widespread. But it is too costly: at some enterprises they have hastily jumped into the middle and held to a steady course toward the shore of "brigadization," while at others they think about it, swim farther or quietly return toward the shore of individual work methods. Some have already returned. And if the "landing party" turns out finally to be small and poorly armed, the blame lies largely with science.

It is symptomatic that at the "round table" not a single question was asked of scientific workers. This was stated by the leading department head of Chelyabinsk State University, Doctor of Economic Sciences A. K. Orlov. Practical workers say: "We cannot wait until science makes a move: we need brigades today." And it sometimes happens that requests for assistance find no response -- this was discussed, for example, by the shop chief of the Yasinovskiy Coke and Chemical Plant (Makeyevka), Ye. V. Smirnov. He turned to a half a dozen scientific research institutes and never received an answer.

Scientific workers usually act according to this system: they study the brigade, discover the merits and shortcomings, make generalizations, and submit recommendations. But, after all, science should first stipulate how one should and how one should not create brigades. True, many research economists spoke at the conference (Doctor of Economic Sciences A. K. Orlov, the docent of the Chelyabinsk branch of the higher school of occupational advancement, Candidate of Economic Sciences A. S. Khodz'ko), as did sociologists and social psychologists (candidates of philosophical sciences from Sverdlovsk, Ye. P. Starodubtsev and V. I. Krovopal'tsev, the chief of the sociology laboratory of the Chelyabinsk Polet Production Association, A. Kh. Yenaleyev, the senior sociologist of OTiZ of the UralAZ Production Association, V. L. Gerasimov, and others). But, with rare exceptions, they discussed the results of research on past experience. Of course, these figures are necessary in order not to repeat mistakes in the future. But the very fact that mistakes have been made, even though they were inevitable, conditioned the most important conclusion and desire of participants in the conference: it is time for science to move forward and to give practical workers a reliable instrument for forming collectives which provide for high labor productivity and socialist attitudes in production. It is necessary for the movement toward the shore of unconditional predominance of collectivism in labor to become decisive, unceasing and reliable.

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## NEWLY ORGANIZED YOUNG READER'S CLUB FOCUSES ON EKO

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian  
No 10, Oct 83 pp 184-187

### Young EKO Readers Club in Nikolayev

[Article by V. Zaruba, chief of sector for scientific youth of the Nikolayev Lenin Young Communist League of the Ukraine, and A. Parsyak, chairman of the club council]

[Text] On 11 November 1982 the sounds of a ship's bell proclaimed the birth of a new club for the youth of the city of ships, who had gathered together around the magazine EKO.

#### Why EKO?

In the first place, because questions related to the development and improvement of economic methods of administration are now at the center of the attention of large circles of the scientific and technical community.

In the second place, because the practical approach to solving these and other problems prevails on the pages of the magazine.

And, finally, the materials of the magazine offer the reader extensive opportunities for self-improvement (we have in mind various methods of training the memory, ways of efficiently organizing labor, rules for selecting clothing, and so forth). This cannot but impress us young people.

Why a club? Primarily because a club successfully combines the opportunities for business discussion and noncompulsory communication among people who are joined together by common occupational interests. There has long been a need to create such a club, and the collective efforts of the Komsomol obkom, the oblast council of young scientists and specialists, the oblast organization of the Znaniye Society, and the division for scientific and technical propaganda of the Palace of Culture and Ship Building Technology have contributed to realizing the idea.

The club considers its task to be to make the materials published in the magazine known to workers of enterprises and organizations, and student and

scientific youth of Nikolayev Oblast, to assist the exchange of opinions among youth on crucial problems of the national economy, to increase their work activity, to organize meetings of club members and eminent scientists and specialists in the area of the problems being discussed, and to contribute to the organization of youth creative associations (public design bureaus, groups of economic researchers, and so forth).

Of course we have no artificial age limits. The fact is that the older comrades already have a club for business meetings in the Palace of Culture and Ship Building Technology. It is called Kontakt. But when senior comrades have asked for permission to attend meetings of our club they have gladly been invited.

In order to notify many EKO readers about the formation of the club, more than 500 information letters were sent to subscribers to the magazine in Nikolayev. Information about the date of the next meeting and the subject is provided in good time through the oblast radio and the youth newspaper, LENINSKOYE PLEMYA.

As a rule, scientists and highly qualified specialists of oblast organizations and enterprises of various branches of oblast industry are enlisted to participate in the meetings.

At one meeting we considered problems of improving the work and financing of urban passenger transportation and the suggestions made in the article by Yu. Lachinov, "Urban Passenger Transportation: Organization, Financing and Khozraschet" (EKO, No 7, 1982). At our invitation, representatives of the city passenger transportation service participated in it.

A good deal of interest was aroused by the meeting devoted to problems of robot technology. At the center of the attention of the participants was the selection of materials published in EKO, No 2, 1982, "Robots -- A Reality of the 20th Century" and information on the activity of the commission for robot technology of the Council for Contributing to Scientific and Technical Progress under the Nikolayev CPSU Obkom.

As in the magazine, meetings of the club are organized under particular headings: "We Inform," "We Share Experience," "We Contemplate," and so forth. But in addition to the traditional headings, the program of each meeting includes another section "We Entertain." Within this framework we organize meetings with creative youth of the city. These meetings do not take up very much time, but they are successful.

Such are the first steps of our club.

#### Conference in Nikolayev

[Text] The EKO editorial staff was convinced that the club of young readers really does not make any age restrictions: the board convened a large group of readers at the meeting with the magazine's editor-in-chief, A. G. Aganbegyan, who responded to the club's invitation to come to Nikolayev. There was an interesting and lively exchange of opinions about articles in the magazine, and many valuable suggestions and wishes were expressed.

The instructor A. Kupriyanov, a member of the club's board, noted that the attraction of young specialists to problems of economics and to the magazine EKO was quite predictable, since many of them are organizers and leaders of schools of economic training and communist education of workers. In the magazine they find answers to questions that arise. The communications of young readers in the club have shown that articles about the lives of scientists and executives and their zealous devotion to their chosen cause are very popular. Such articles provide an answer to the question of role models. A. Kupriyanov expressed a desire for the editors to publish more materials like the memoires of M. A. Lavrent'yev.

I. Godes, a student of the Nikolayev Ship Building Institute, discussed the fact that future engineers take a serious interest in EKO in the fourth grade, when there is a need for materials on the organization of production and labor and norm setting. "I should like to see more of these articles," the speaker concluded.

V. Ch. Li, a professor and head of the department of economics and organization of production of the Nikolayev Ship Building Institute, thinks that it is necessary to discuss the economics of large regions, particularly the Ukraine, Belorussia and others. To do this he suggests creating correspondence points in the various economic regions of the country.

The director of the Nikolayev branch of the center for scientific organization of labor, N. M. Starikov, discussed the new phenomena in production administration which have appeared in connection with the extensive introduction of brigade forms of labor organization under the 11th Five-Year Plan:

"The new category of managers-brigade leaders is making its way into the sphere of administration. Working with them (they take training at the center for scientific organization of labor) I see that this is an audience which is grateful and extremely interested in knowledge about administration. Therefore I suggest that EKO expand the section for socio-economic practical work sessions using materials that are intended for leaders of brigades and councils of brigade leaders.

"We are collecting many articles from EKO, since we use them extensively in pedagogical work. It would be good if the magazine published appendices related to the subjects under certain of its headings."

This suggestion was supported by L. M. Khodorkovskiy, a docent at the Nikolayev Ship Building Institute, who thinks that we need an EKO library.

Speakers at the conference said that the magazine should devote more attention to the introduction of its recommendations and articles on advanced experience.

"I shall touch on only one area -- improving the organizational structure," noted the chief of the ASUP division of the Okean shipyard, Ye. L. Kroyter. "Usually we learn of experience and the final parameters of its results, but we can never find anything about the plant mechanism for its implementation --

the methodology for development, technology or the stages of its introduction. We are hoping for help from EKO."

"The introduction of any advanced experience at an enterprise is, if you will, a kind of organizational and economic experiment," said the design engineer, S. Ye. Kashevarova, "and any experiment involves a certain risk factor. Managers are not always psychologically ready for this. Therefore, in my opinion, in the materials on advanced experience it is necessary to show more clearly the results achieved by the enterprises and the manager from the introduction, and to show how the psychology of administration changes during the course of the experiment, and what stumbling blocks have to be overcome."

Participants in the conference recommended increasing the information on problems of autonomous financing and the independence of enterprises and associations.

The editor-in-chief of EKO, Academician A. G. Aganbegyan, answered questions from the readers about the plans and prospects of the magazine and about materials that are being prepared.

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